GRAPH DRAWING CONTEST
2024 Report

gd 24

CONTEST COMMITTEE

Sara Di Bartolomeo
TU Wien

Fabian Klute (chair)
Polytechnic University of Catalonia

Jules Wulms
TU Eindhoven

Wouter Meulemans
TU Eindhoven

Debajyoti Mondal
University of Sakatchewan

GRAPH DRAWING CONTEST

Historic Perspective

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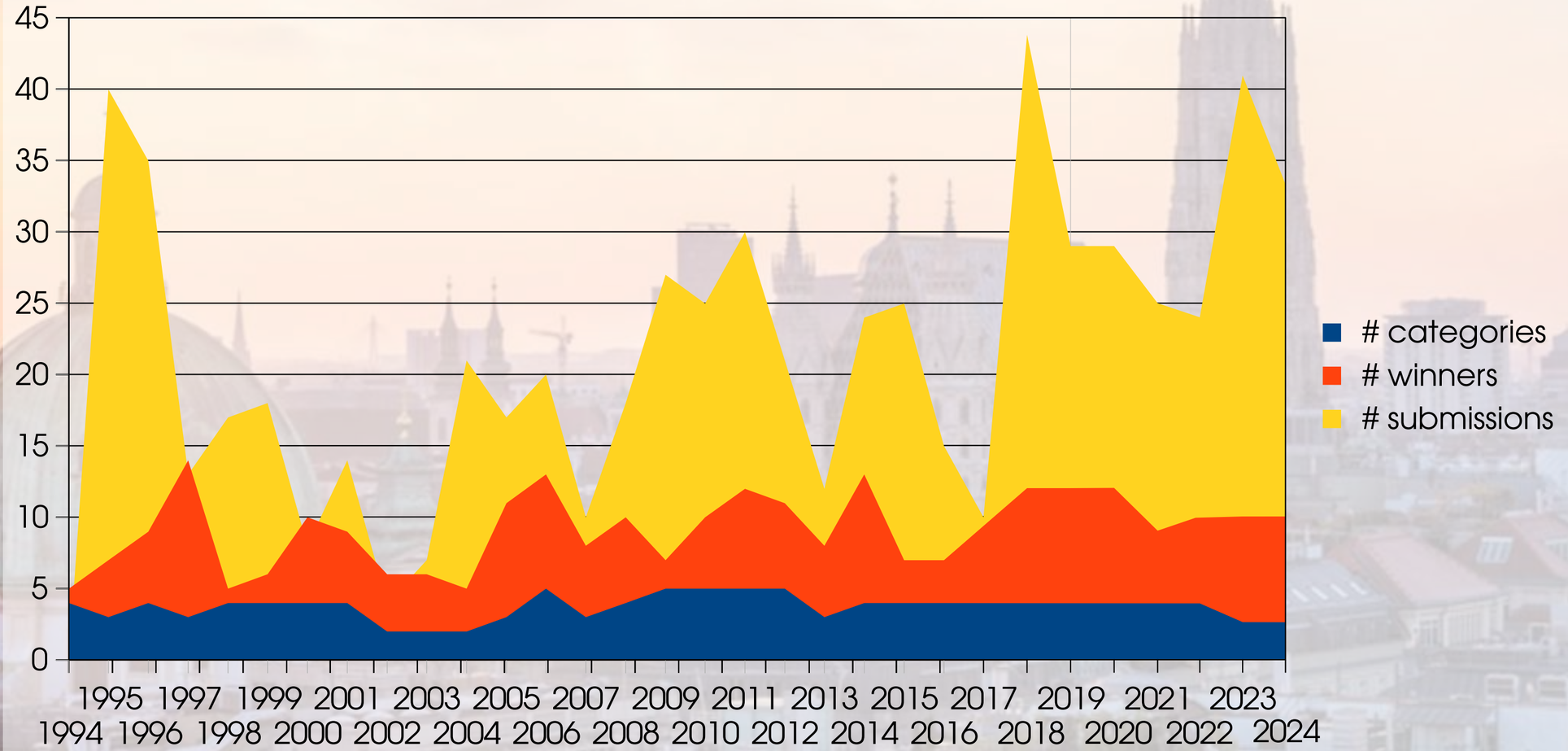
GRAPH DRAWING CONTEST

Historic Perspective



GRAPH DRAWING CONTEST

Historic Perspective

1994 Uwe Wuerker • Stefan Hougardy • Petra Mutzel & Thomas Odenthal • Georg Sander

1995 Falk Schreiber & Carsten Friedrich • Vladimir Batagelj & Andrej Mrvar • Paulis Kikusts & Peteris Rucevskis • Georg Sander

1996 Ulrich Fößmeier & Michael Kaufmann • Vladimir Batagelj & Andrej Mrvar • Falk Schreiber & Carsten Friedrich • Thomas Kamps, Jörg Kleinz & Thomas Reichenberger

1997 B. Bascary, B. Cattan, A. Cohen-Solal, M. Philip & H. Szigeti • Vladimir Batagelj & Andrej Mrvar • Michael Kaufmann & Gunnar Klau • Thomas Ziegler & Petra Mutzel • Cristian Ghezzi • Falk Schreiber & Carsten Friedrich

1998 Vladimir Batagelj & Andrej Mrvar • Petrus Abri Santoso & Andi Surjanto • Roland Wiese

1999 Vladimir Batagelj & Andrej Mrvar • Ulrik Brandes • Karlis Freivalds & Paulis Kikusts • Rowena Mankelow

2000 Nikola S. Nikolov • Vladimir Batagelj & Andrej Mrvar • Jan Adamec • C. Duncan, P. Gajer, M. Goodrich & S. Kobourov • Robby Schönfeld & Nikola S. Nikolov

2001 Ulrik Brandes & Marco Gärtler • C. Gutwenger, K. Klein, J. Kupke & S. Leipert • Roland Wiese • Carsten Friedrich • Merijam Percan

2002 Daniel Gmach • Paul Holleis & Thomas Zimmermann • Nikola S. Nikolov & Patrick Healey • Christoph Vogt

2003 Daniel Gmach, Paul Holleis & Thomas Zimmermann • Christian Kuklas, Dirk Koschützki & Falk Schreiber

2004 Andrei Grecu & Gunnar Klau • Ulrik Brandes, Daniel Fleischer & Thomas Puppe

2005 Markus Chimani, Carsten Gutwenger & Karsten Klein • V. Batagelj, A. Mrvar, A. Ahmed, X. Fu, S. Hong & D. Merrick • Marco Gärtler & Markus Krug

2006 Michael McGuffin • Adel Admed, Seok-Hee Hong, Quan Nguyen & Donald Taylor • Adel Admed, Xiaoyan Fu, Seok-Hee Hong, Quan Nguyen & Kai Xu • Fabrizio Frati & Markus Geyer • Andreas Gerasch & team

2007 Wolfgang Brunner & Jens Schmidt • Robert Theron, Rodrigo Santamaria, Juan Garcia, Diego Gomez & Vadim Paz-Madrid • Felix Heinen

2008 Yifan Hu & Emden Gansner • Melanie Badent & Pietro Palladino • Melanie Badent, Martin Mader & Christian Piech • Hoi-Ming Wong, Markus Chimani & Karsten Klein

2009 Hui Liu • Nicholas Jefferson • Melanie Badent & Michael Baur • Hoi-Ming Wong & Karsten Klein • Joe Fowler

2010 Quan Nguyen • Sergey Pupyrev • M. Baur, M. Siebenhaller, R. Wiese & Thomas Wurst • Petra Mutzel & Hoi-Ming Wong • Maarten Löffler & Martin Nöllenburg

2011 Hanley Weng • M. Löffler, D. Eppstein, M. Goodrich & S. Kobourov • R. Zelina, S. Bota, S. Houtman & R. Ban • Sergey Pupyrev • Maarten Löffler & Martin Nöllenburg

2012 Roman Prutkin • Sergey Pupyrev • Remus Zelina, S. Bota, S. Houtman & R. Balaban • Tobias Brinkjost • A. Bauer, I. Rutter, J. Vordermeier & M. Kaufmann

2013 Jos de Jong & Giovanni Pazienza • Remus Zelina, Sebastian Bota, Siebren Houtman & Radu Balaban • Thomas Bläsius & Ignaz Rutter

2014 Martin Nöllenburg • Remus Zelina, Sebastian Bota, Siebren Houtman & Radu Balaban • Tamara Mchedlidze, Martin Nöllenburg, Alexander Khomenko, Igor Karlinsky & Denis Knöpfle • Philipp Kindermann, Fabian Lipp & Wadim Reimche

2015 Tamara Mchedlidze • Jennifer Hood & Pat Morin • Boris Klemz, Ulf Rüegg & Fabian Lipp • Josef Cibulka

2016 Fabian Klute • Jonathan Klawitter & Tamara Mchedlidze • Michael Bekos, Thanasis Lianeas & Chrysanthi Raftopoulou • Johan de Ruiter

2017 Steven Shangzhou Wang • Fabian Klute & Irene Parada • Theresa Fröschl, Jonathan Klawitter & Darren Strash • Almut Demel, Dominik Dürrschnabel, Tamara Mchedlidze, Marcel Radermacher & Lasse Wulf

2018 Evmorfia Argyriou, Michael Baur, Anne Eberle & Armin Gufler • Florian Grötschla, Tamar Mirbach, Christian Ortlieb, Tamara Mchedlidze & Marcel Radermacher • Myroslav Kryven & Johannes Zink • Amadäus Spallek, Christian Geckeler, Henry Förster & Michael Bekos

2019 Evmorfia Argyriou, Christian Brunnermeier, Anne Eberle & Johannes Rössel • Guangping Li, Soeren Nickel, Martin Nöllenburg, Ivan Viola & Hsiang-Yun Wu • Evmorvia Argyriou, Henry Förster &Martin Gronemann • Solveig Klepper, Axel Kuckuk, Paul Palomero Bernardo, Maximilian Pfister, Patrizio Angelini, Michalis Bekos & Michael Kaufmann

2020 Tamara Drucks, Moritz Leidinger & Giulio Pace • Rupert Ettrich, Julian Haumer & Samantha Fuchs • Jonathan Klawitter & Johannes Zink • Solveig Klepper, Axel Kuckuk, Paul Palomero Bernardo, Maximilian Pfister, Patrizio Angelini, Michalis Bekos, Henry Förster, & Michael Kaufmann

2021 Simon Pointner, David Ammer & Thorsten Korpitsch • Jonathan Klawitter & Felix Klesen • Moritz Greiner, Axel Kuckuk, Michael Bekos & Maximilian Pfister

2022 Thomas Depian, Michael Huber & Wilhelm Wanecek • Axel Kuckuk, Henry Förster & Sarah Gester • Fouli Argyriou & Henry Förster • Laurent Moalic, Dominique Schmitt & Julien Bianchetti

2023 André Schulz • Christoph Kern, Manuel Oberbacher & Horst Zahradnik • Tim Hegemann, Florentina Voboril & Johannes Zink • Julien Bianchetti, Laurent Moalic & Dominique Schmitt

2024 ?

2024 CONTEST

Overview

2024 CONTEST
Overview

CREATIVE TOPIC

LIVE CHALLENGE

2024 CONTEST
Overview

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CREATIVE TOPIC

Medals at the Olympic Games

Visualize the medal winning countries at the modern olympics and draw some “interesting” conclusions.

LIVE CHALLENGE

2024 CONTEST
Overview

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Medals at the Olympic Games

Visualize the medal winning countries at the modern olympics and draw some "interesting" conclusions.

LIVE CHALLENGE

Draw a graph on a given pointset and minimize the crossings. The points are not necessarily in general position.

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manual category

automatic category

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gd 24

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Visualize the medal winning countries at the modern olympics and draw some "interesting" conclusions.

9 submissions

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17 submissions

automatic category

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manual category

17 submissions

automatic category

7 submissions

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manual category

17 submissions

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2024 CONTEST

Overview

Participating individuals per country

2024 CONTEST
Overview

Participating individuals per country

Germany
Austria
France
Netherlands
Czechia
Italy
Greece
USA
Australia
Sweden

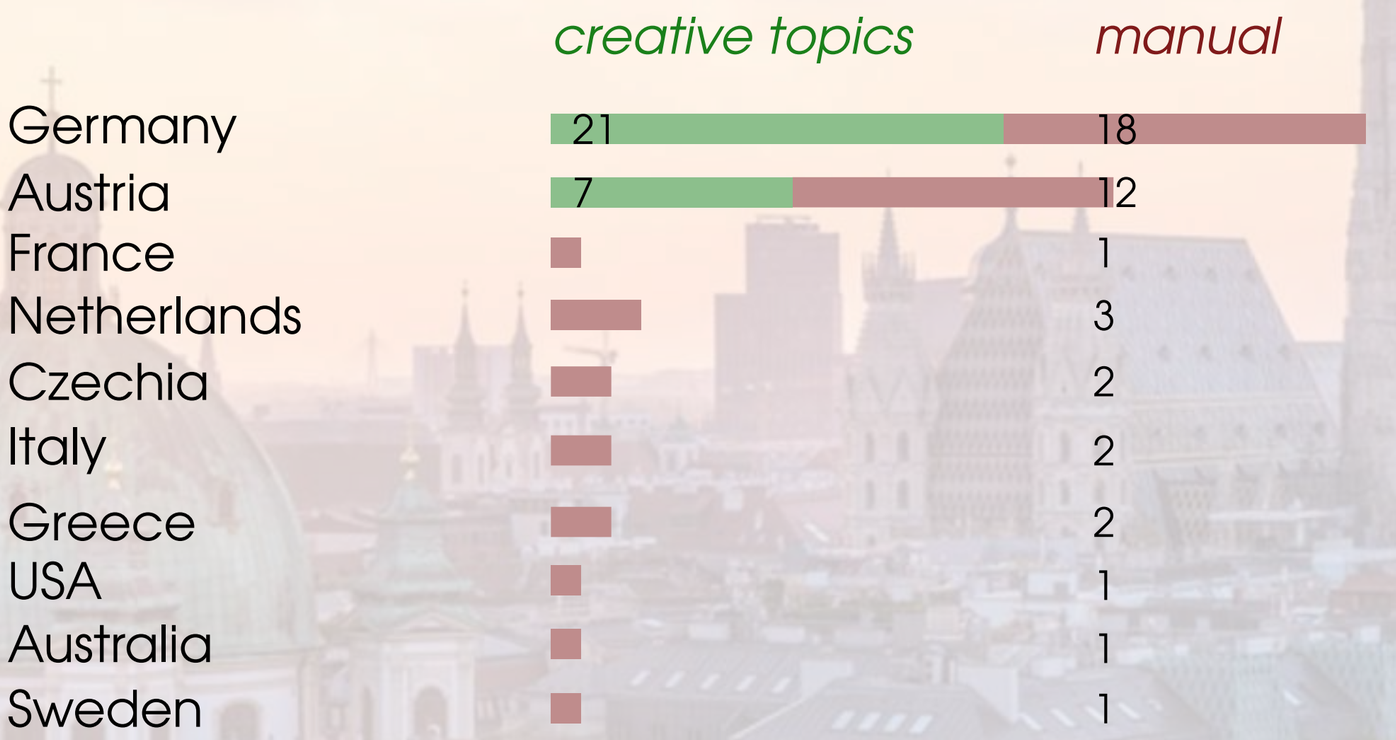
2024 CONTEST
Overview

Participating individuals per country

	creative topics
Germany	21
Austria	7
France	
Netherlands	
Czechia	
Italy	
Greece	
USA	
Australia	
Sweden	

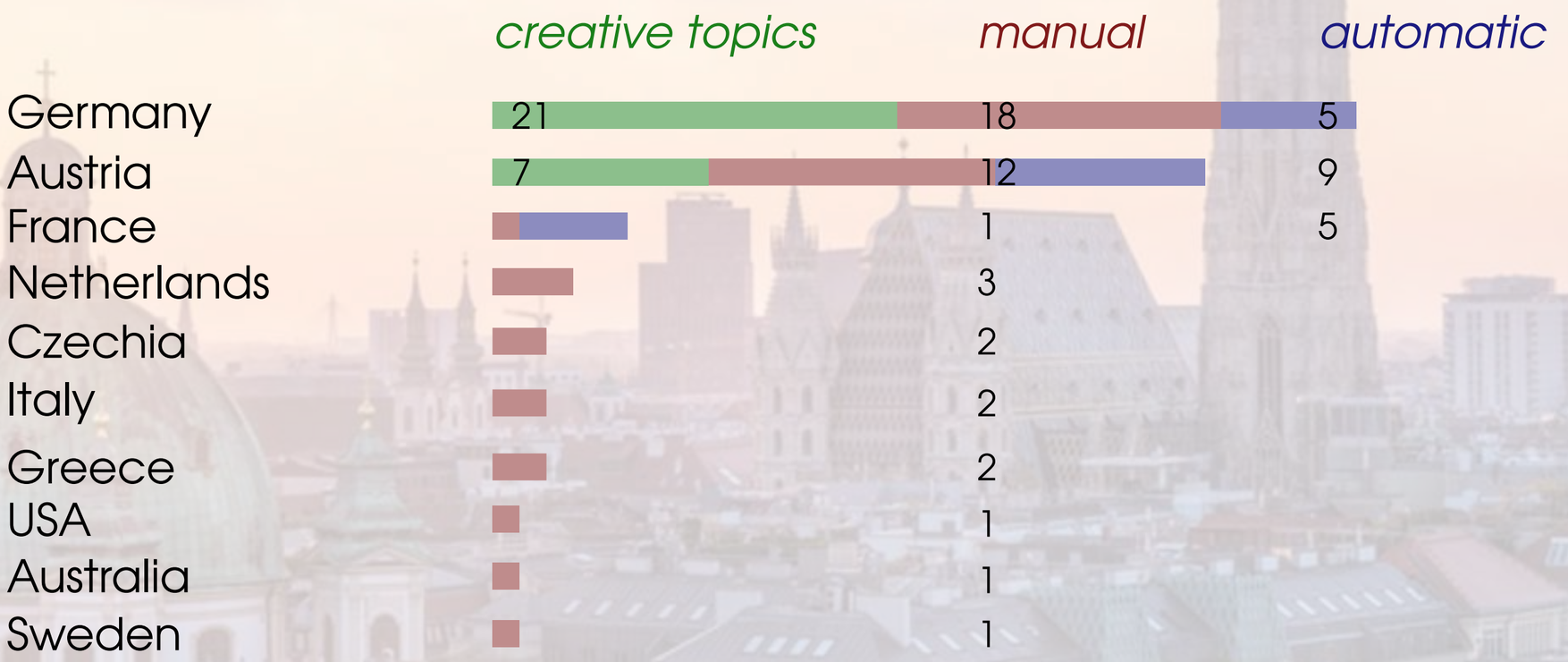
2024 CONTEST
Overview

Participating individuals per country



2024 CONTEST
Overview

Participating individuals per country



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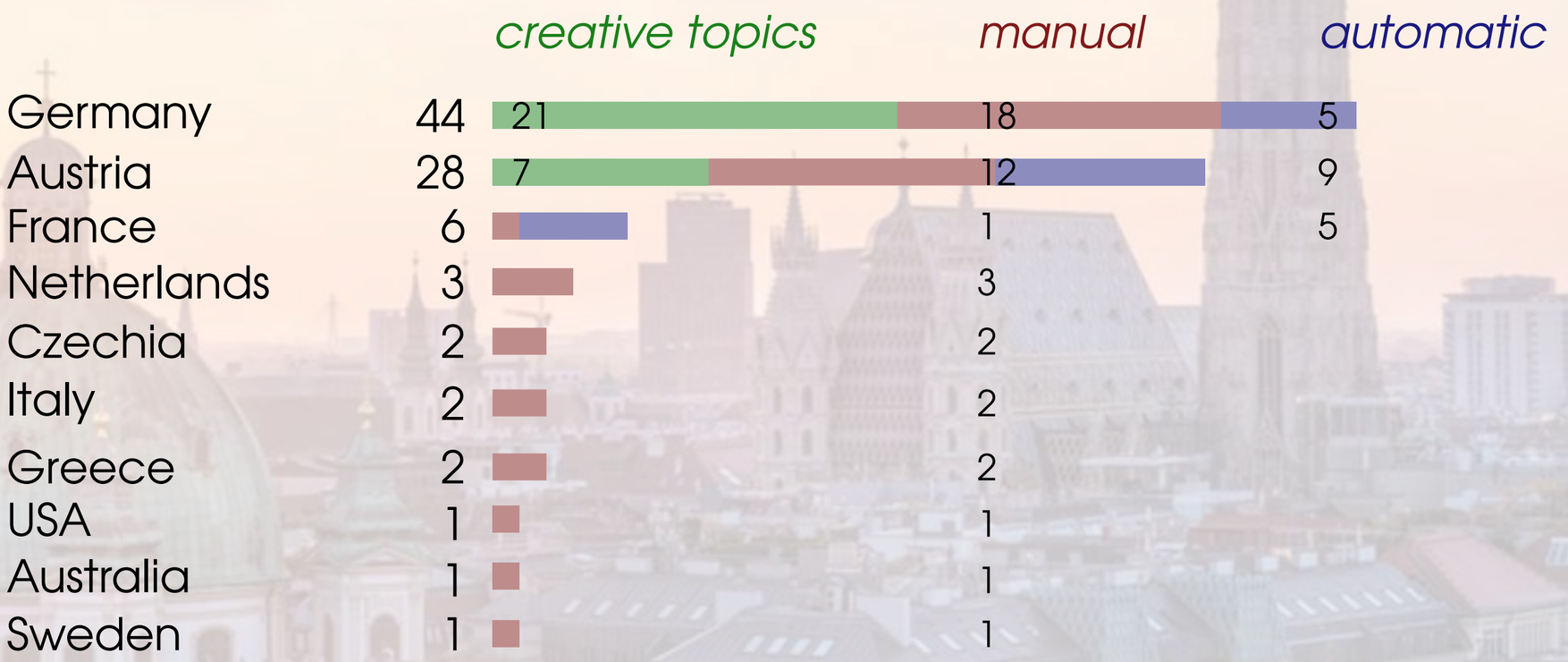
Overview

Participating individuals per country



GRAPH DRAWING CONTEST

Creative Topic

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GRAPH DRAWING CONTEST

Creative Topic

gd 24

Medal winning countries at Olympia

GRAPH DRAWING CONTEST

Creative Topic

Medal winning countries at Olympia

GRAPH DRAWING CONTEST

Creative Topic

gd 24

Medal winning countries at Olympia

- Nodes: Countries and sport-types

GRAPH DRAWING CONTEST

Creative Topic

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Medal winning countries at Olympia

- Nodes: Countries and sport-types
- Edge: Country won a medal at some olympics in this sport

GRAPH DRAWING CONTEST

Creative Topic

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Medal winning countries at Olympia

- Nodes: Countries and sport-types
- Edge: Country won a medal at some olympics in this sport

We loosely categorized the 68 sports into 11 categories

GRAPH DRAWING CONTEST

Creative Topic

Medal winning countries at Olympia

- Nodes: Countries and sport-types
- Edge: Country won a medal at some olympics in this sport

Edge-metadata is list with records containing:

- Year of medal
- Medal type
- Sex of athlete
- …

GRAPH DRAWING CONTEST

Creative Topic

gd 24

Medal winning countries at Olympia

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Edge-metadata is list with records containing:

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- …

You will need to use some!

GRAPH DRAWING CONTEST

Creative Topic

Medal winning countr

- Nodes: Countries
- Edge: Country wo … s sport

Edge-metadata is list with re

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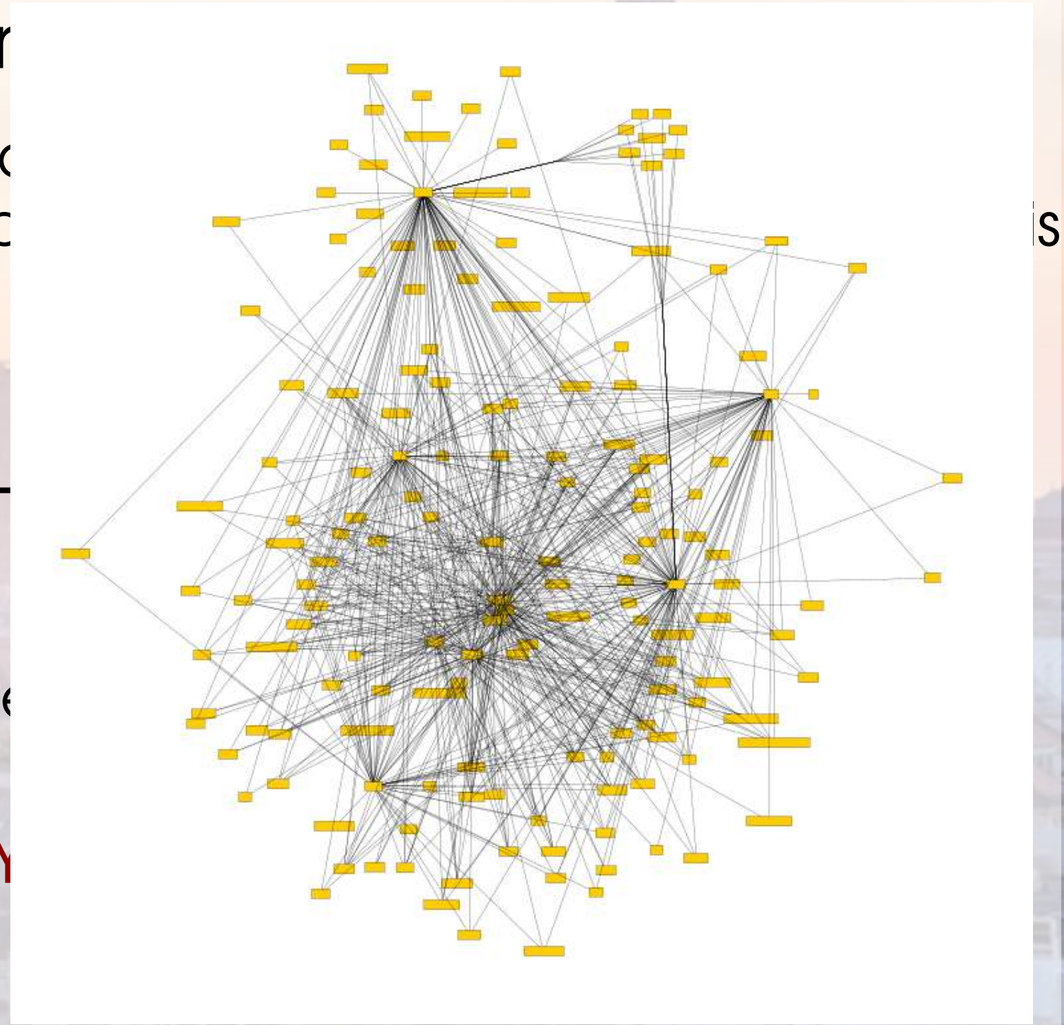
- Sex of athlete
- …



GRAPH DRAWING CONTEST

Creative Topic

Medal winning cou

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- Edge: Country
  sport

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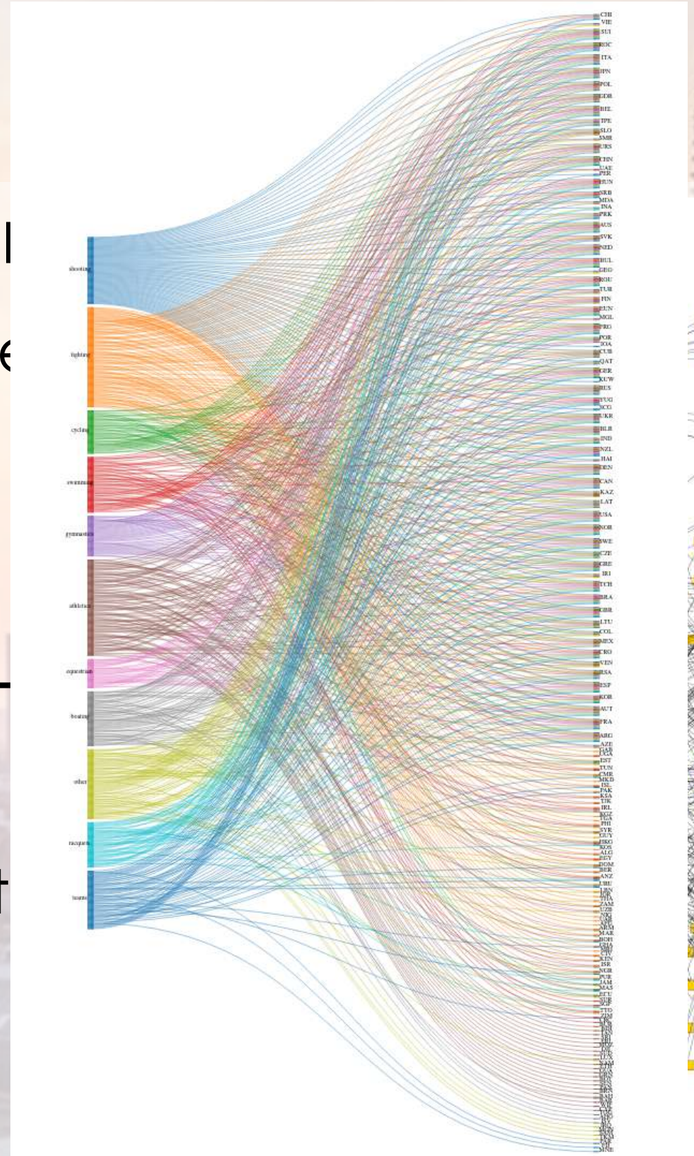
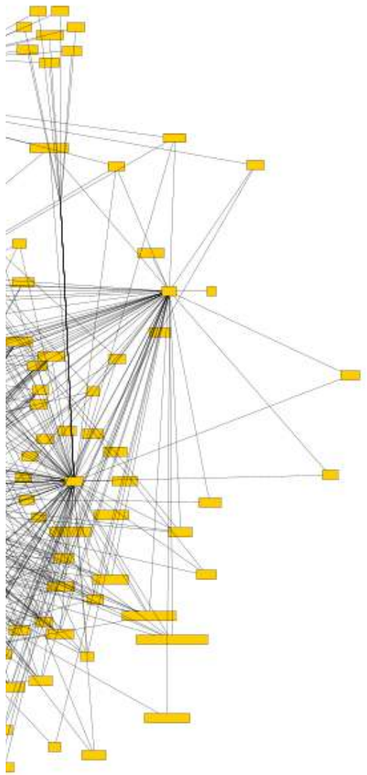
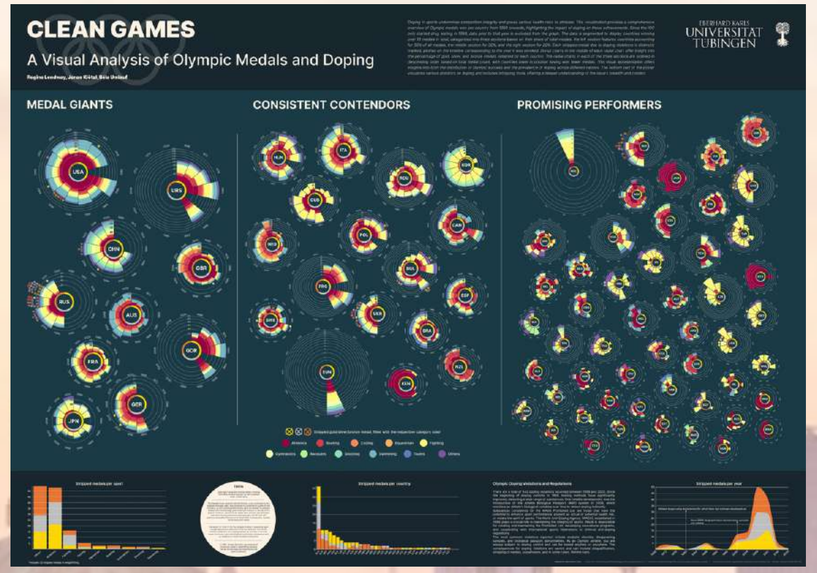


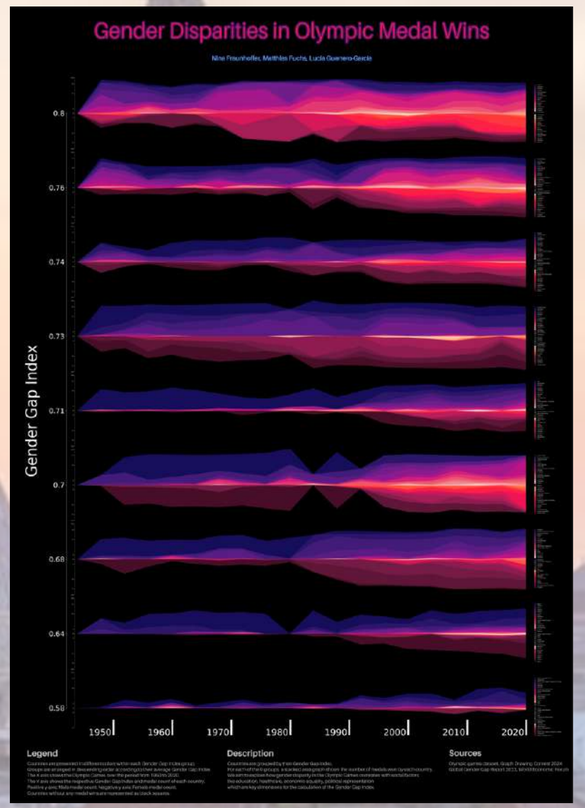


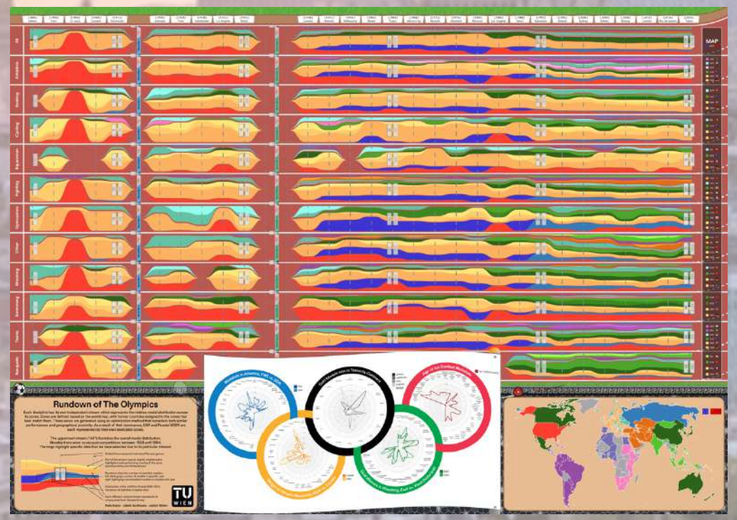
GRAPH DRAWING CONTEST

Outside the Top 6

gd 24

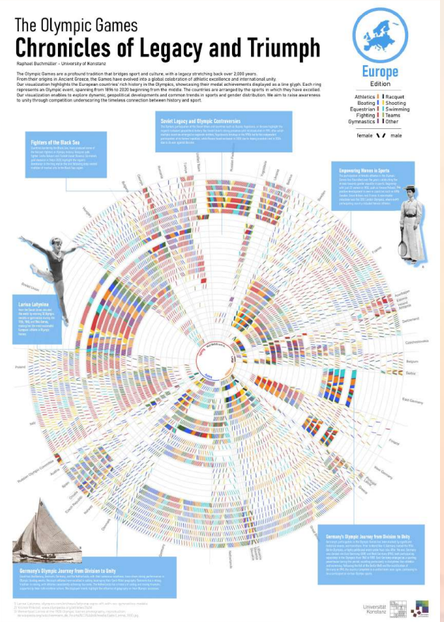


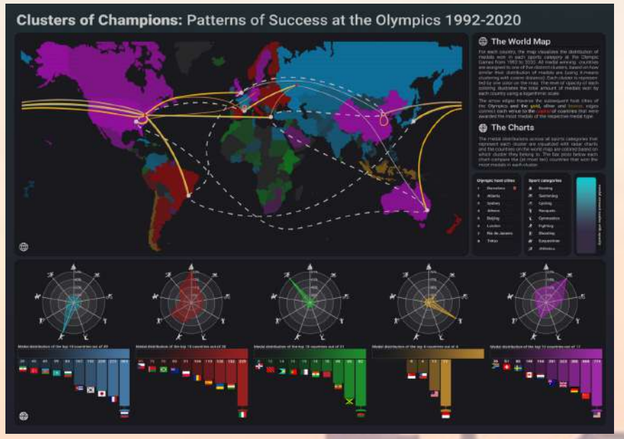


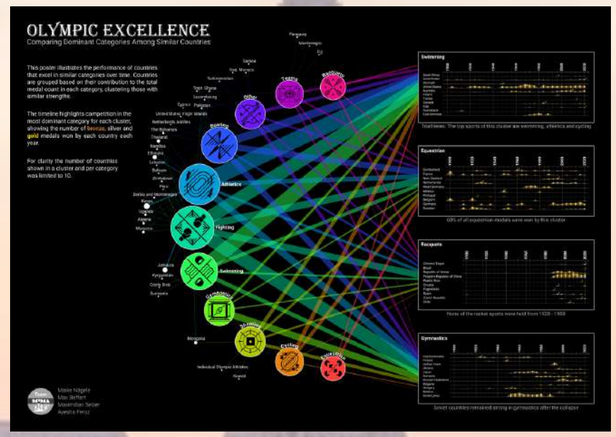


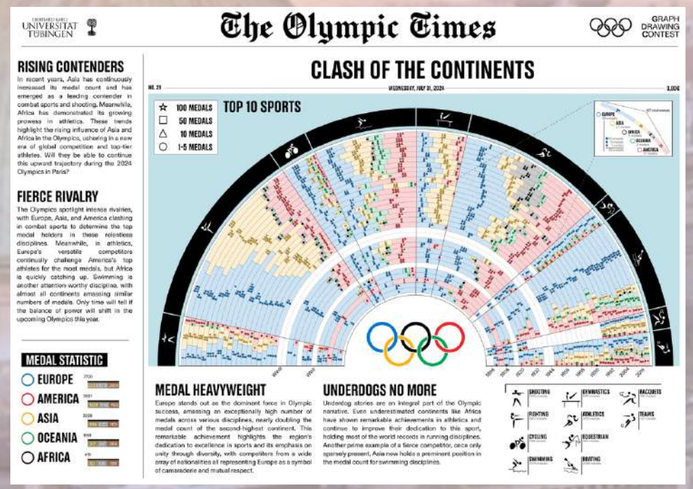
CREATIVE TOPICS

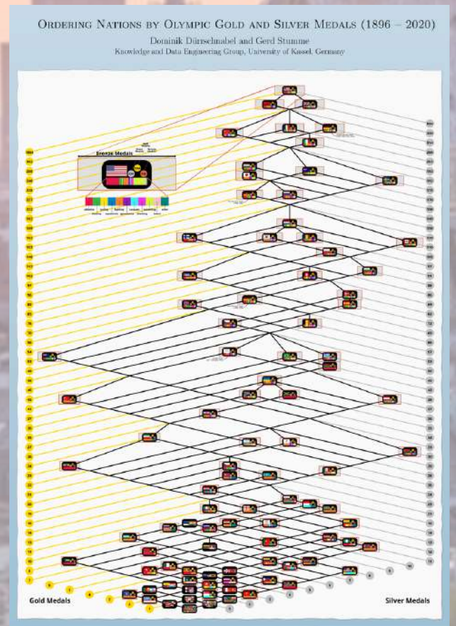
Top 6

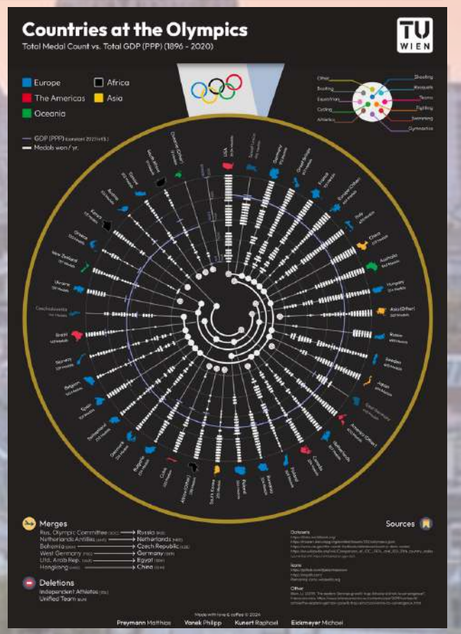








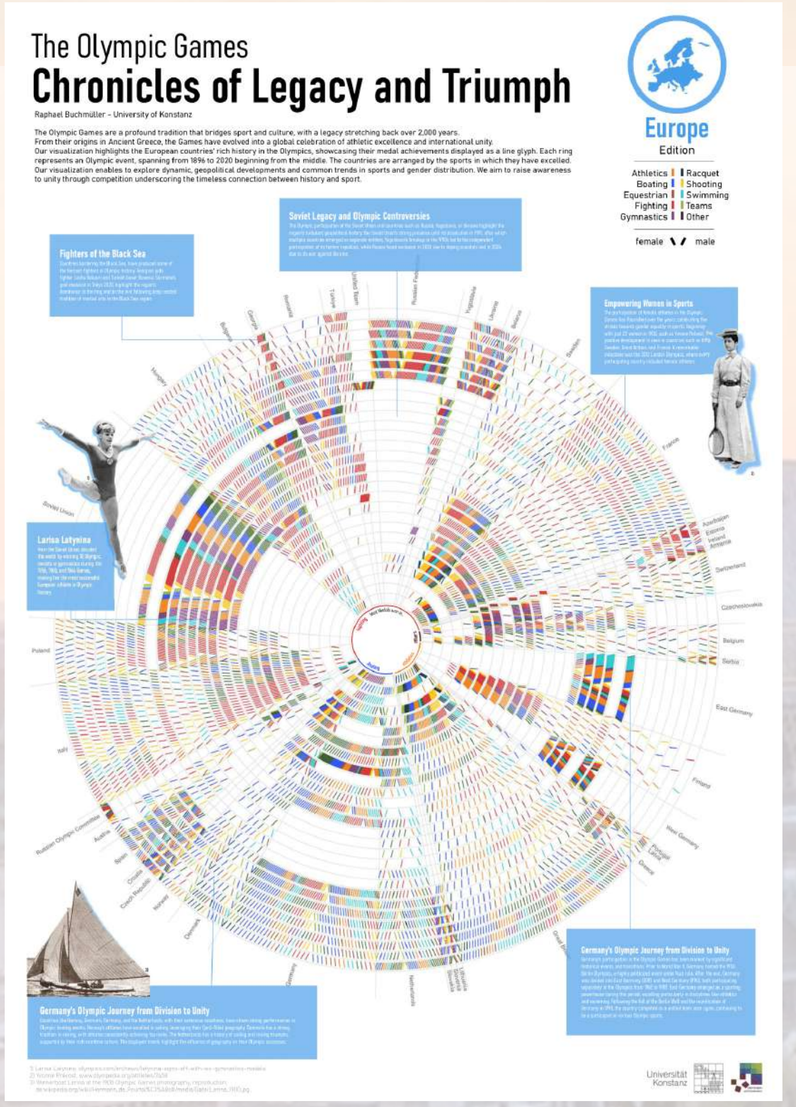




CREATIVE TOPICS

Medals at Olympia

4th Place

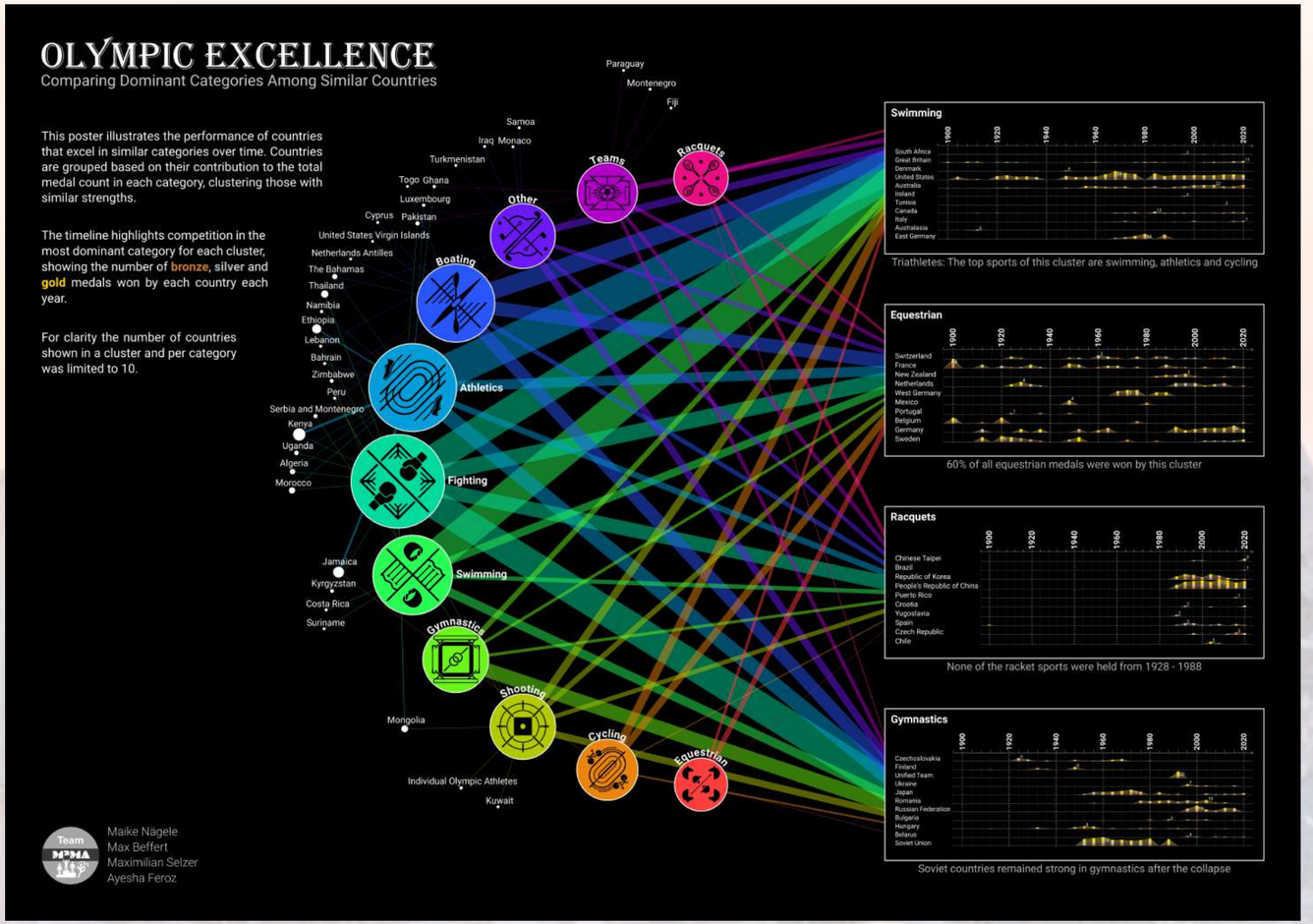


Raphael Buchmüller
(University of Konstanz)

CREATIVE TOPICS

Medals at Olympia

4th Place

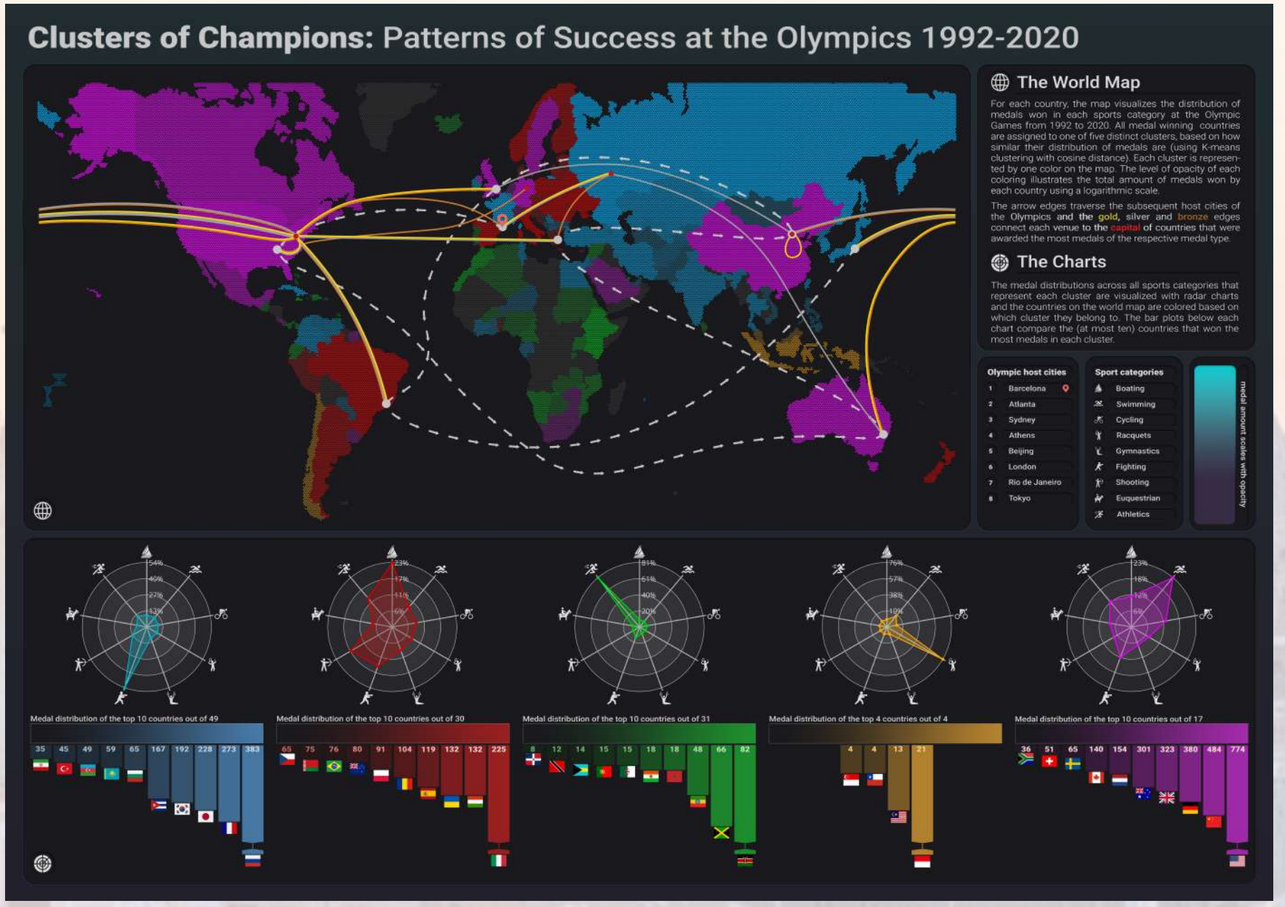


Max Beffert
Maike Nägele
Maximilian Selzer
Ayesha Feroz
(University of Tübingen)

CREATIVE TOPICS

Medals at Olympia

4th Place

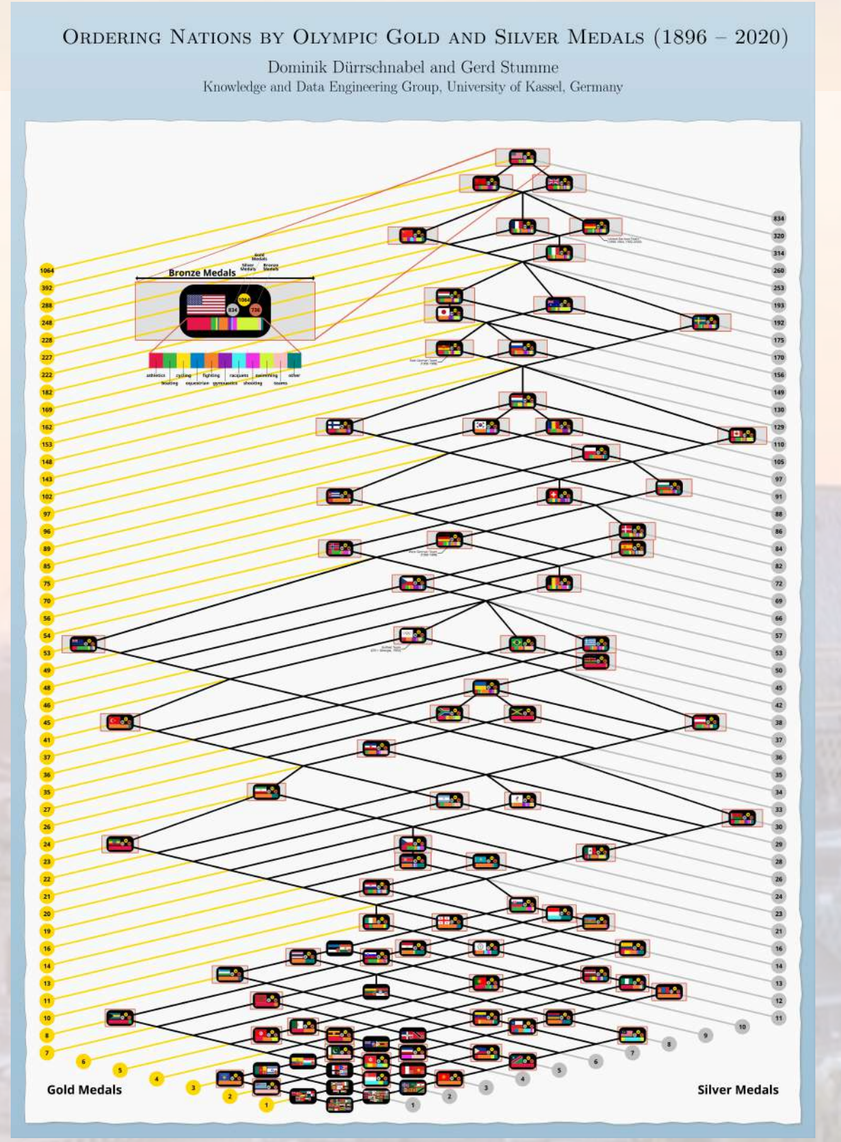


Sebastian Dubiel
Tarik Eker
Niklas Munkes
Michelle Schlicher
(University of Tübingen)

CREATIVE TOPICS

Medals at Olympia

3rd Place

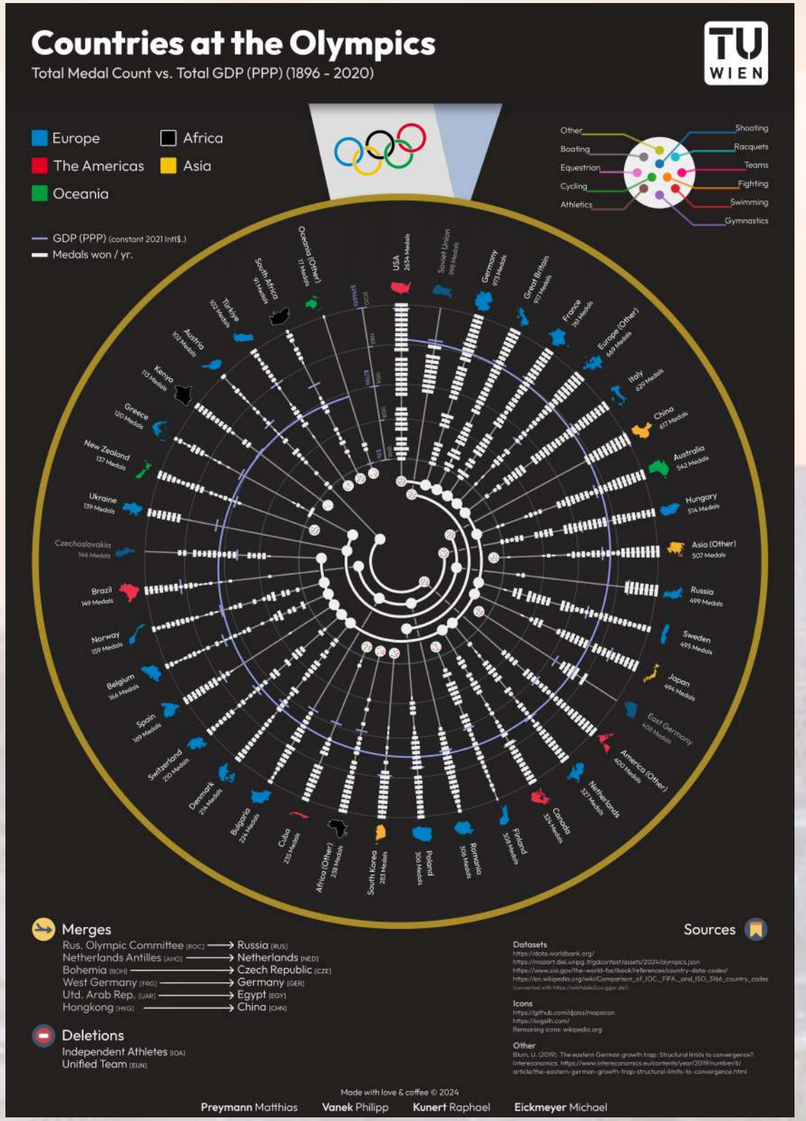


Dominik Dürrschnabel
Gerd Stumme
(University of Kassel)

CREATIVE TOPICS

Medals at Olympia

2nd Place

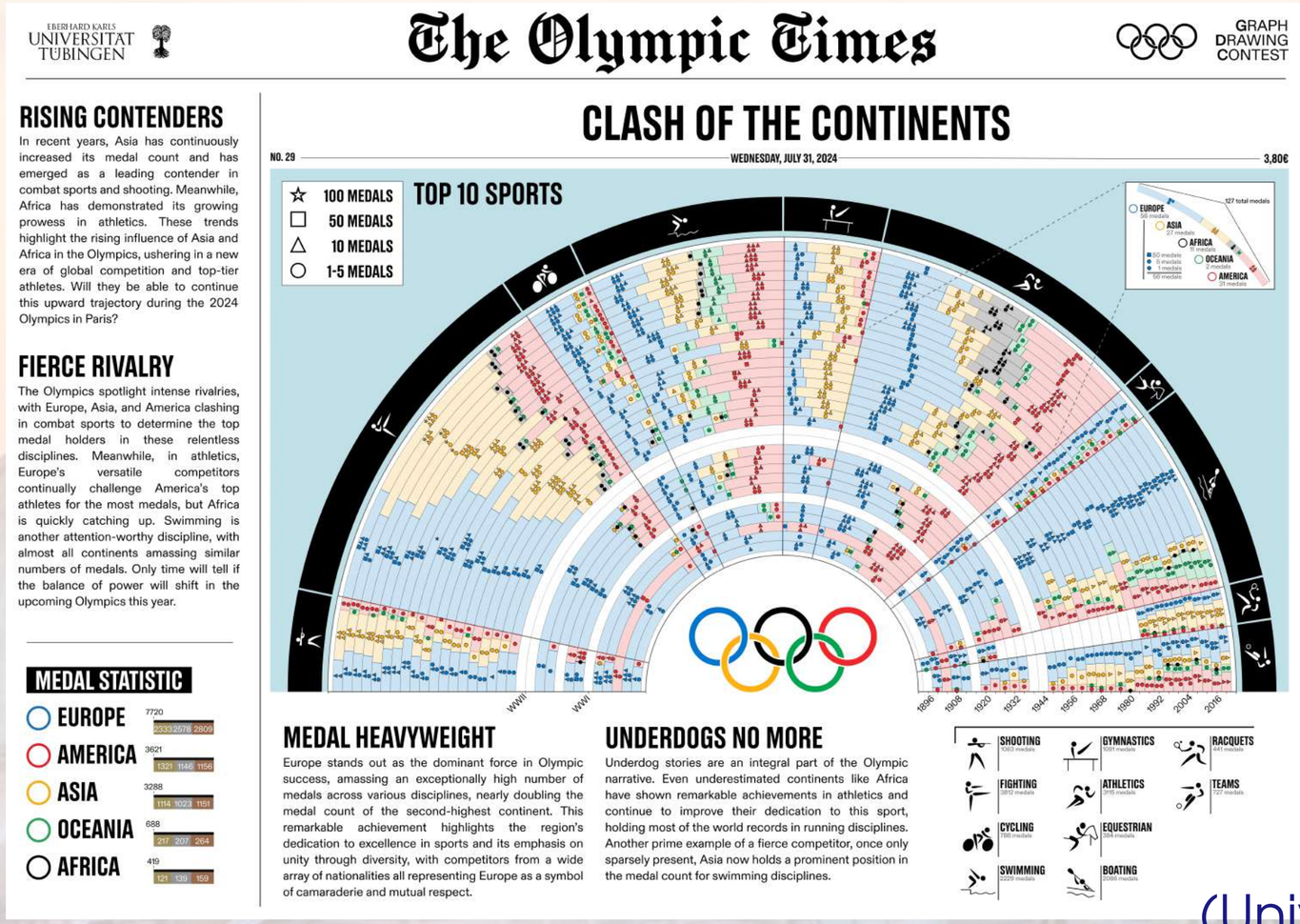


Matthias Preymann
Philipp Vanek
Michael Eickmeyer
Raphael Kunert
(TU Wien)

CREATIVE TOPICS

Medals at Olympia

1st Place



EBERHARD KARLS UNIVERSITÄT TÜBINGEN

The Olympic Times

GRAPH DRAWING CONTEST

CLASH OF THE CONTINENTS

NO. 29 — WEDNESDAY, JULY 31, 2024 — 3,80€

RISING CONTENDERS

In recent years, Asia has continuously increased its medal count and has emerged as a leading contender in combat sports and shooting. Meanwhile, Africa has demonstrated its growing prowess in athletics. These trends highlight the rising influence of Asia and Africa in the Olympics, ushering in a new era of global competition and top-tier athletes. Will they be able to continue this upward trajectory during the 2024 Olympics in Paris?

FIERCE RIVALRY

The Olympics spotlight intense rivalries, with Europe, Asia, and America clashing in combat sports to determine the top medal holders in these relentless disciplines. Meanwhile, in athletics, Europe's versatile competitors continually challenge America's top athletes for the most medals, but Africa is quickly catching up. Swimming is another attention-worthy discipline, with almost all continents amassing similar numbers of medals. Only time will tell if the balance of power will shift in the upcoming Olympics this year.

MEDAL STATISTIC

EUROPE	7720	2333	2578	2809
AMERICA	3621	1321	1146	1158
ASIA	3288	1114	1023	1151
OCEANIA	688	237	207	244
AFRICA	419	121	139	159

100 MEDALS
50 MEDALS
10 MEDALS
1-5 MEDALS

TOP 10 SPORTS

EUROPE 56 medals
ASIA 27 medals
AFRICA 9 medals
OCEANIA 2 medals
AMERICA 31 medals
127 total medals
50 medals
10 medals
5 medals
1 medals
100 medals

WWII WWI 1896 1908 1920 1932 1944 1956 1968 1980 1992 2004 2016

MEDAL HEAVYWEIGHT

Europe stands out as the dominant force in Olympic success, amassing an exceptionally high number of medals across various disciplines, nearly doubling the medal count of the second-highest continent. This remarkable achievement highlights the region's dedication to excellence in sports and its emphasis on unity through diversity, with competitors from a wide array of nationalities all representing Europe as a symbol of camaraderie and mutual respect.

UNDERDOGS NO MORE

Underdog stories are an integral part of the Olympic narrative. Even underestimated continents like Africa have shown remarkable achievements in athletics and continue to improve their dedication to this sport, holding most of the world records in running disciplines. Another prime example of a fierce competitor, once only sparsely present, Asia now holds a prominent position in the medal count for swimming disciplines.

SHOOTING 1063 medals
GYMNASTICS 1031 medals
RACQUETS 441 medals
FIGHTING 5812 medals
ATHLETICS 3115 medals
TEAMS 727 medals
CYCLING 1285 medals
EQUESTRIAN 1054 medals
SWIMMING 5209 medals
BOATING 2080 medals

Hoang An Nguyen
Nico Martin
Jannik Brandstetter
Micha Fauth
(University of Tübingen)

LIVE CHALLENGE

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Crossing-Minimal Point-Set Embedding

- input: a graph and a point set (possibly more points than vertices)

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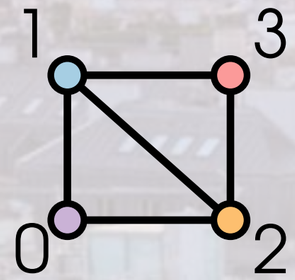

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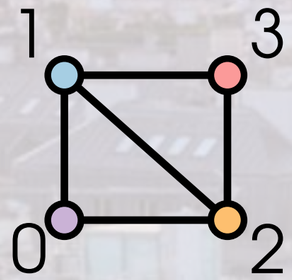
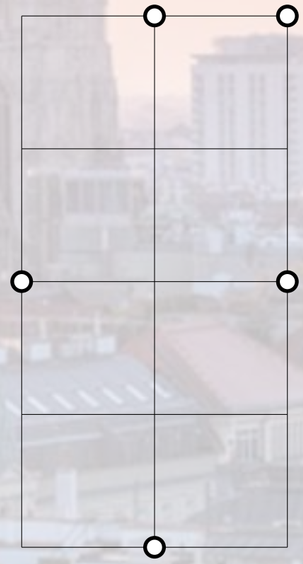
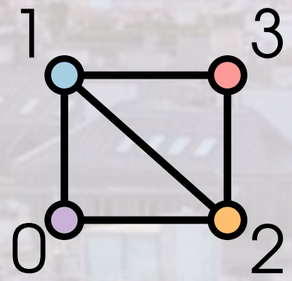


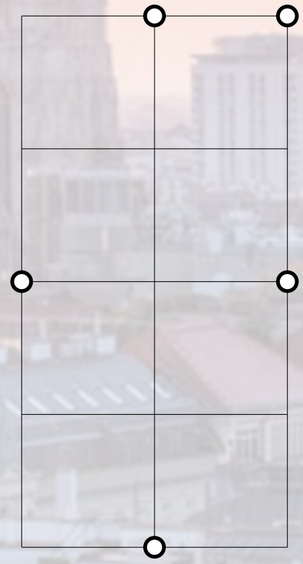


LIVE CHALLENGE

Crossing-Minimal Point-Set Embedding

- input: a graph and a point set (possibly more points than vertices)
- output: drawing of the graph with vertices on the point set





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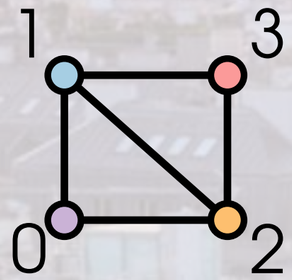
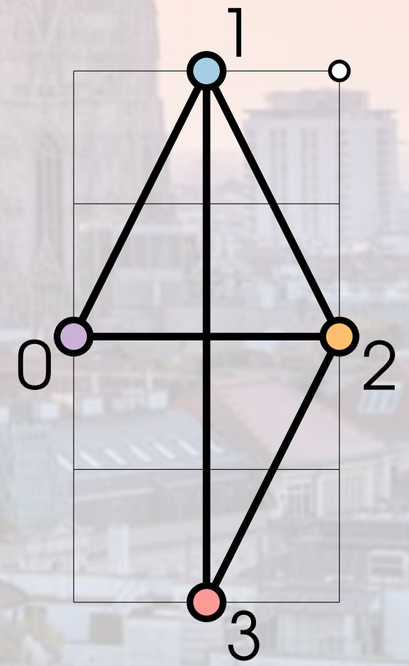
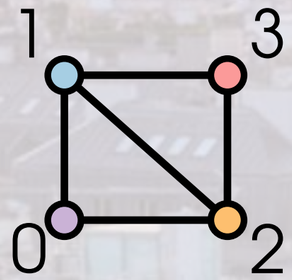


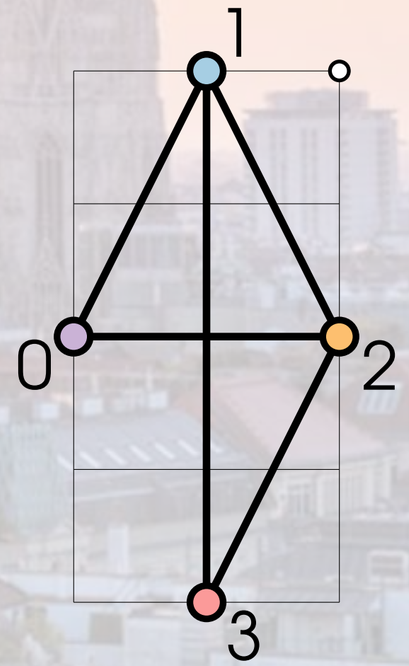


LIVE CHALLENGE

Crossing-Minimal Point-Set Embedding

- input: a graph and a point set (possibly more points than vertices)
- output: drawing of the graph with vertices on the point set
- objective. minimize #crossings

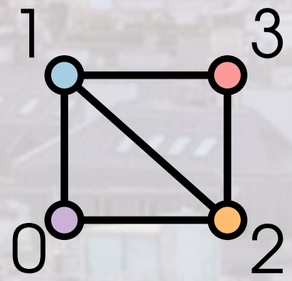


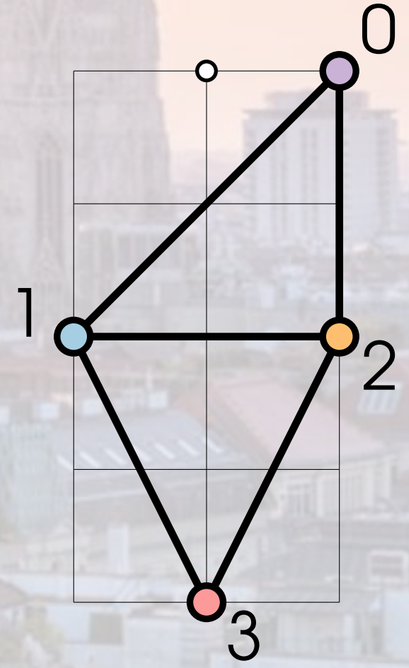


LIVE CHALLENGE

Crossing-Minimal Point-Set Embedding

- input: a graph and a point set (possibly more points than vertices)
- output: drawing of the graph with vertices on the point set
- objective. minimize #crossings





LIVE CHALLENGE

Crossing-Minimal Point-Set Embedding

- input: a graph and a point set (possibly more points than vertices)
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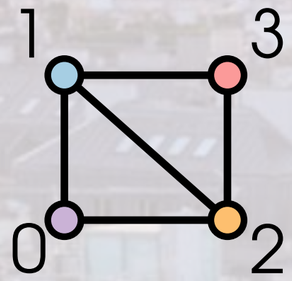
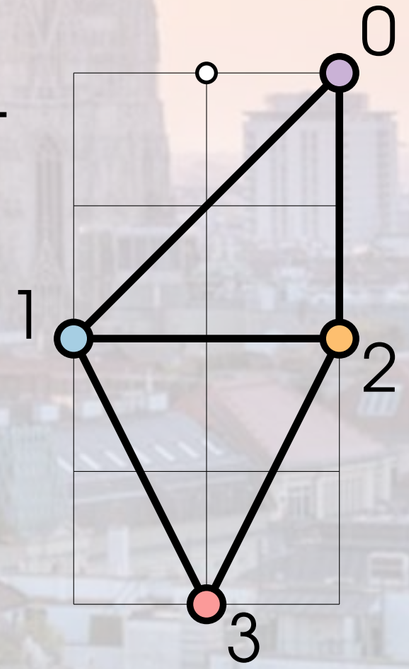
- objective. minimize #crossings
- points are on integer grid, but not necessarily in general position





LIVE CHALLENGE

Crossing-Minimal Point-Set Embedding

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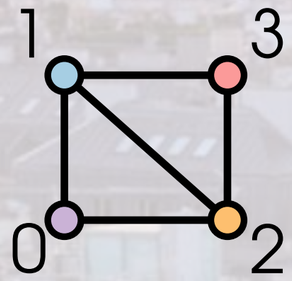

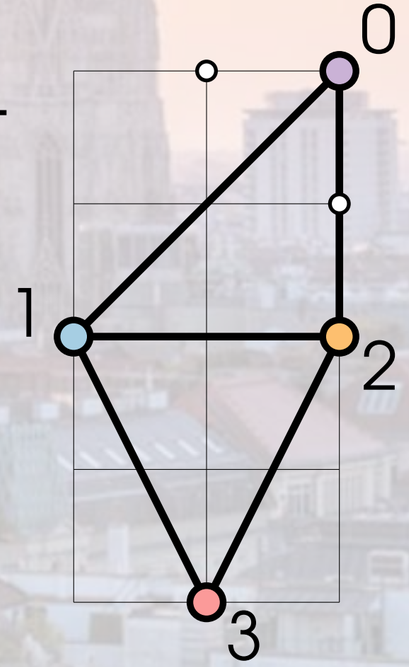

LIVE CHALLENGE

Photos

LIVE CHALLENGE

Photos

LIVE CHALLENGE
Photos

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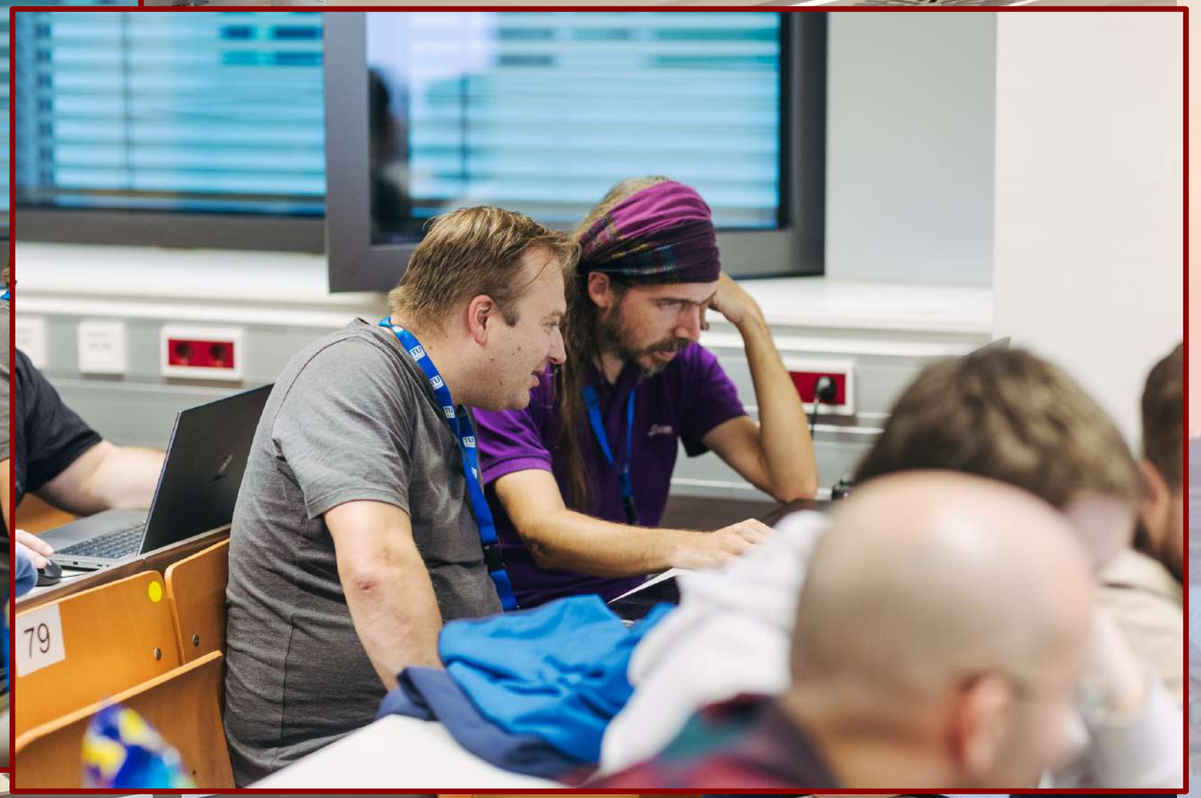
LIVE CHALLENGE

Photos

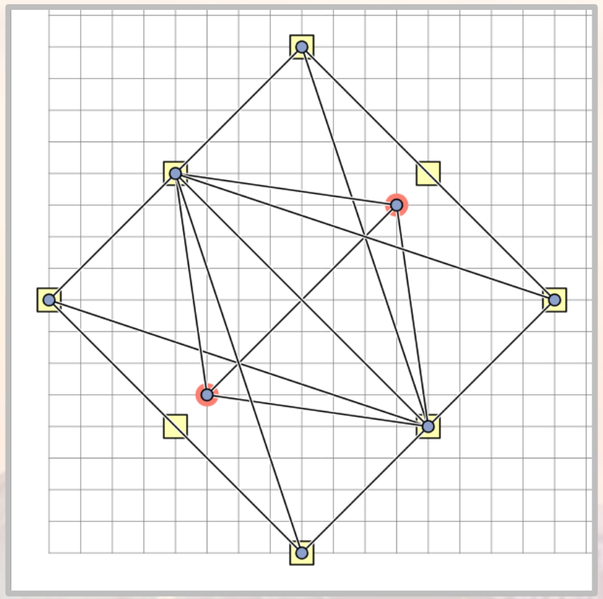


LIVE CHALLENGE

The Graphs

LIVE CHALLENGE

The Graphs



input

best manual

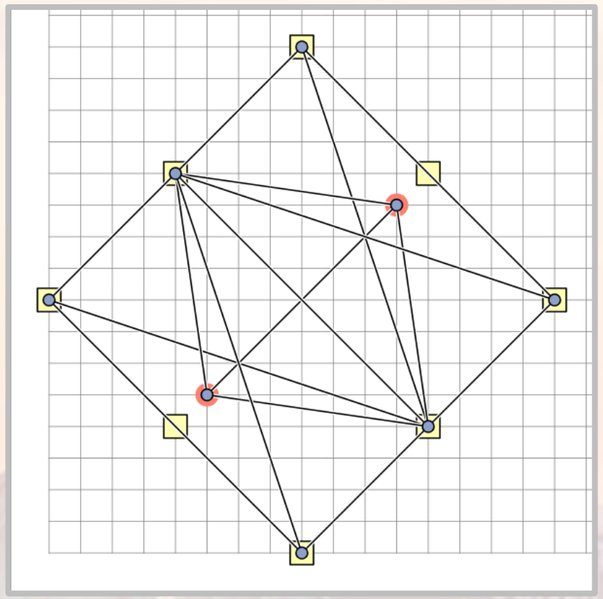
best automatic

11 crossings (inv)

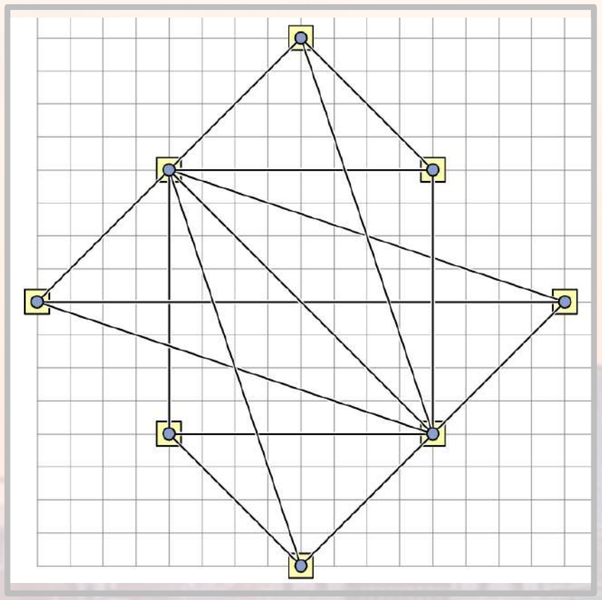
graph **1**

LIVE CHALLENGE

The Graphs



input



best manual

best automatic

We made the rules

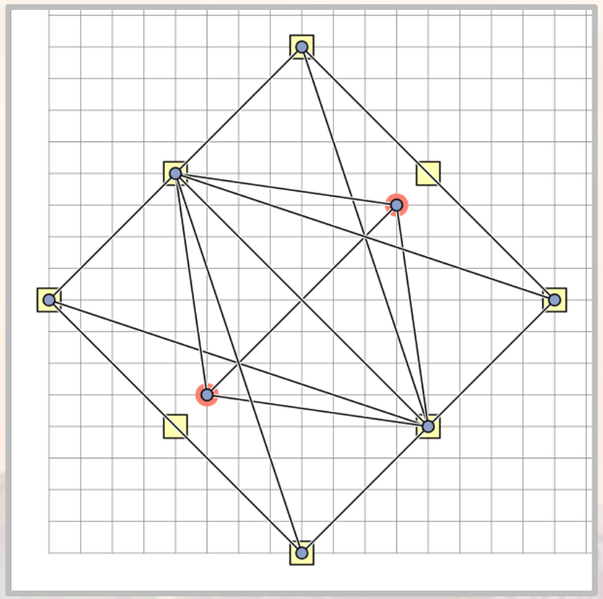
11 crossings (inv)

11 crossings

graph **1**

LIVE CHALLENGE

The Graphs



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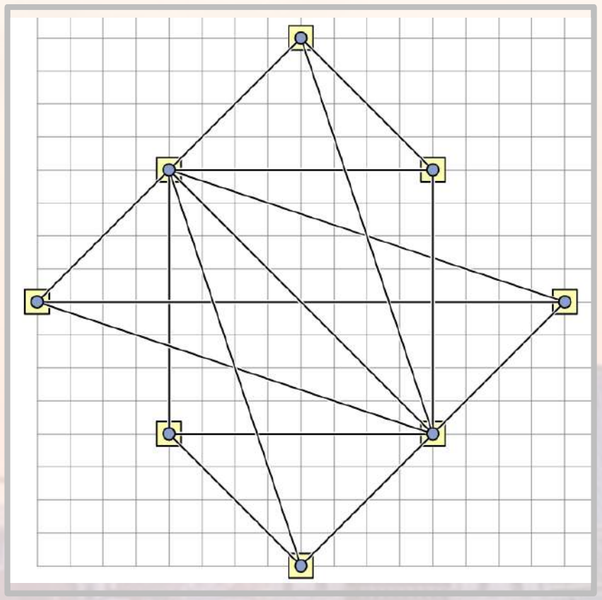
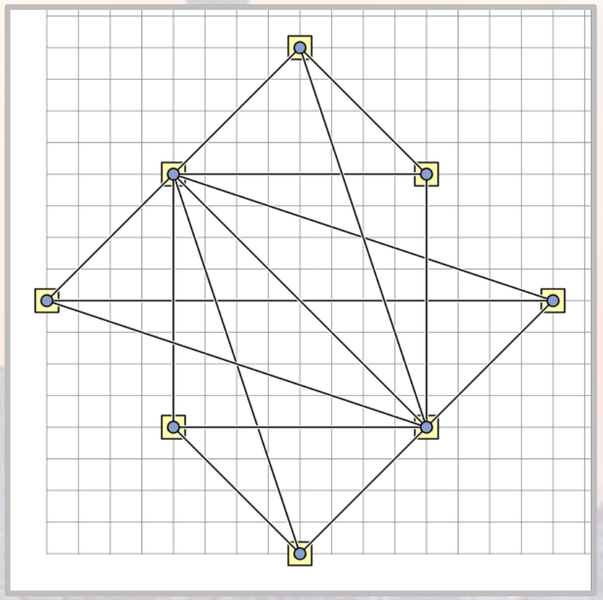


best manual

We made the rules

11 crossings



best automatic

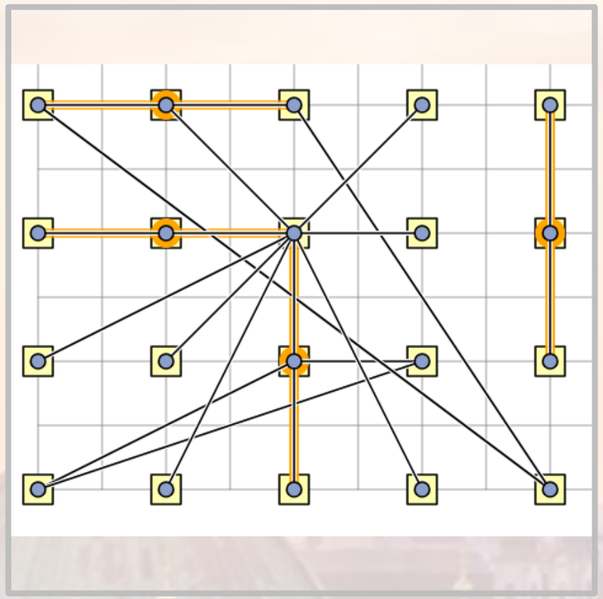
OptimizationGroup2

11 crossings

11 crossings (inv)

graph **1**

LIVE CHALLENGE
The Graphs



input

best manual

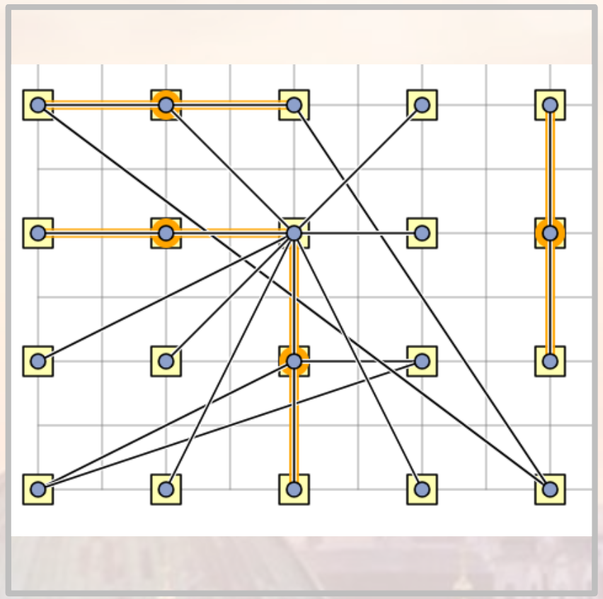
best automatic

136 crossings

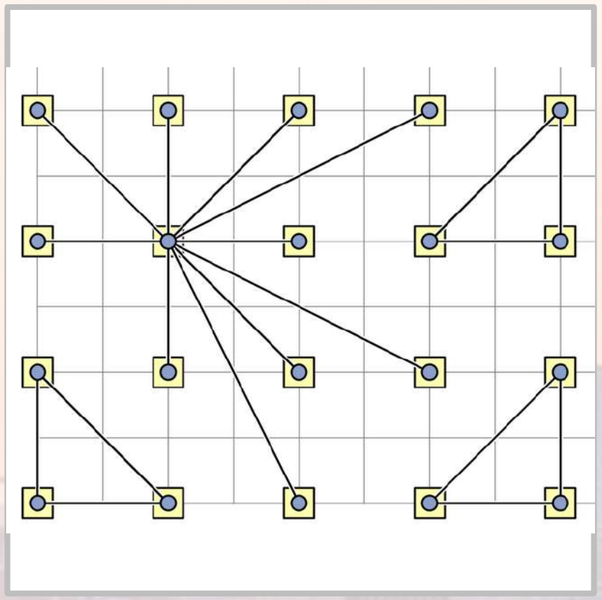
graph **2**

LIVE CHALLENGE

The Graphs



input



best manual

TheGronemanns.

0 crossings

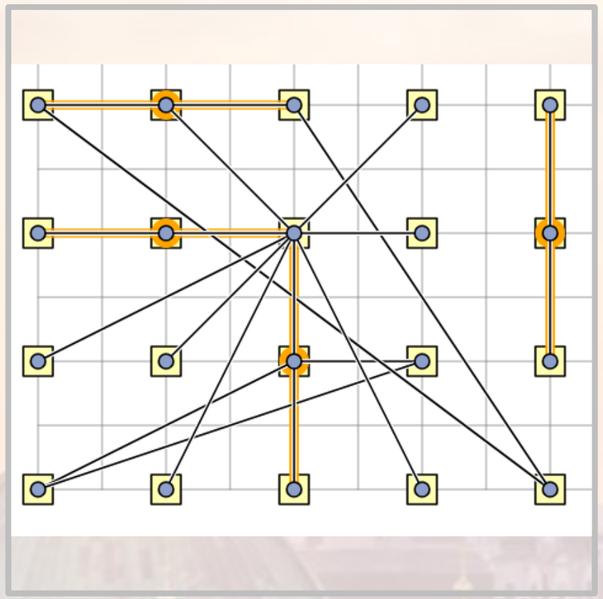
best automatic

136 crossings

graph **2**

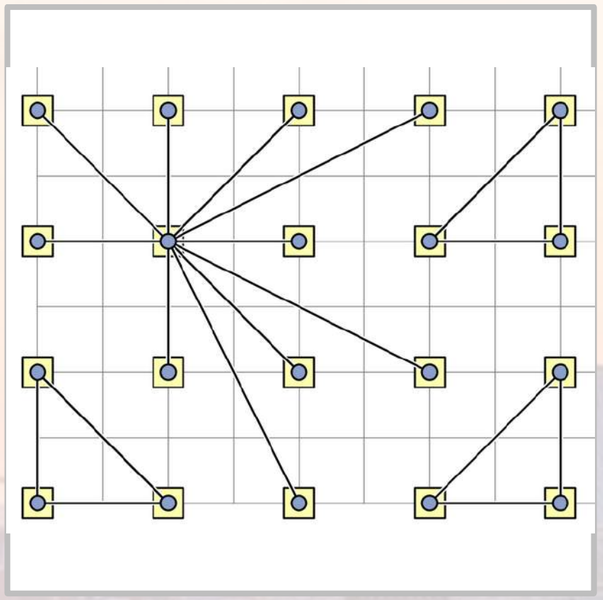
LIVE CHALLENGE

The Graphs



input

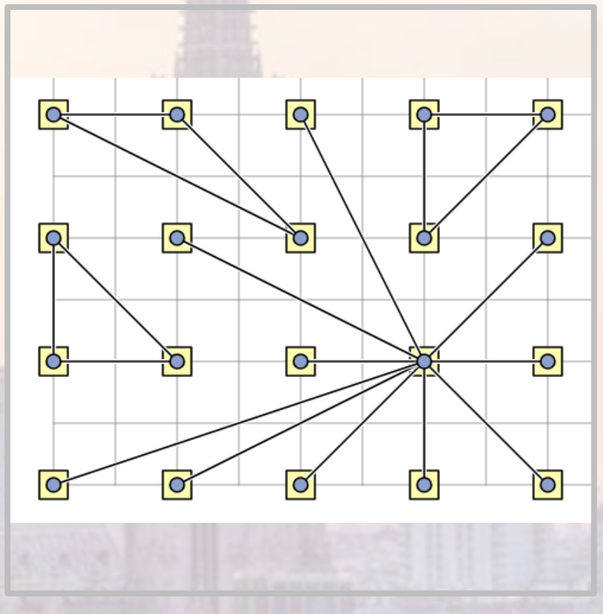
136 crossings



best manual

TheGronemanns.

0 crossings



best automatic

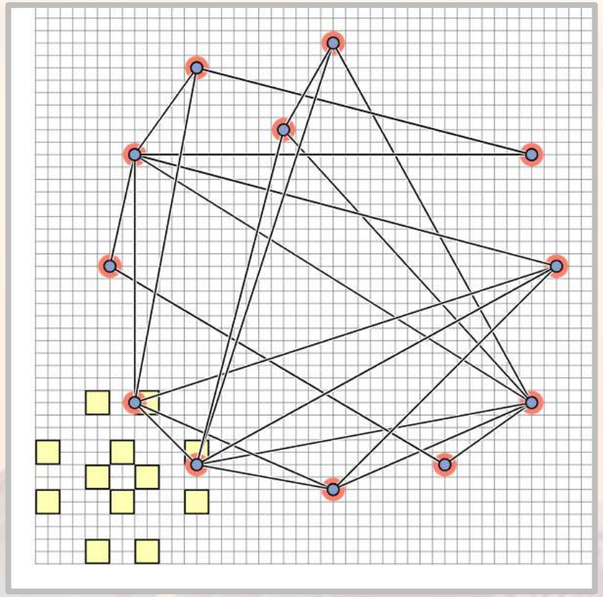
Geometry

0 crossings

graph **2**

LIVE CHALLENGE

The Graphs



input

best manual

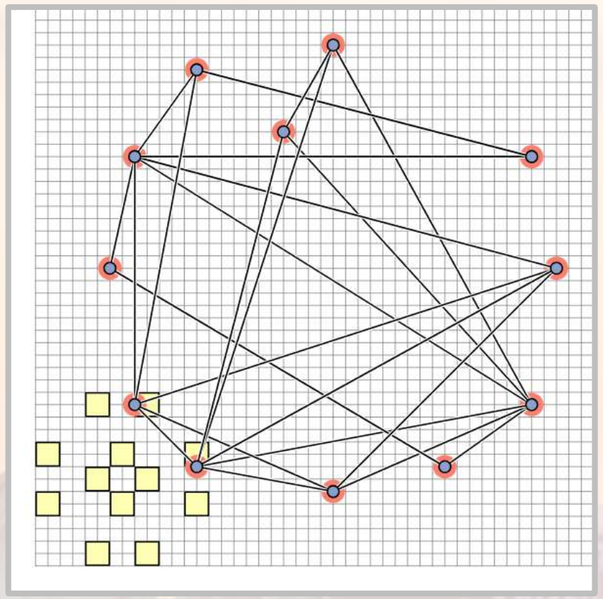
best automatic

42 crossings (inv)

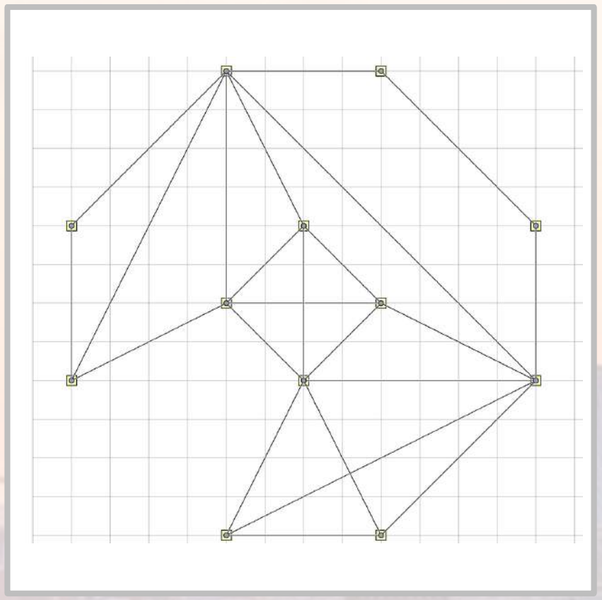
graph **3**

LIVE CHALLENGE

The Graphs



input



best manual

ThePointless

2 crossings

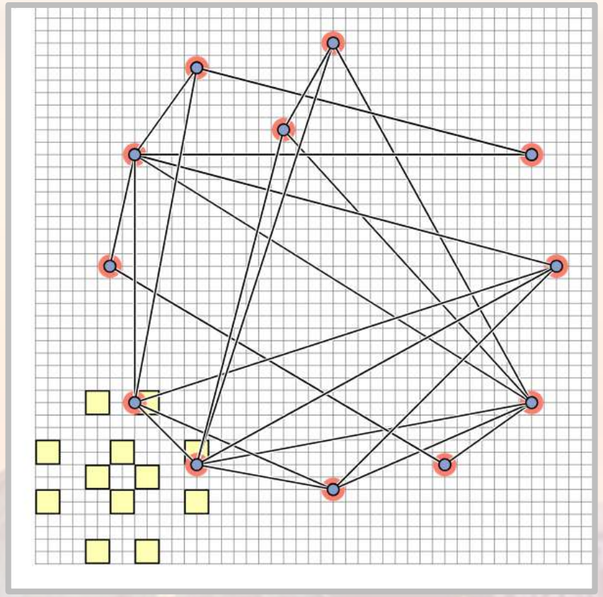
best automatic

42 crossings (inv)

graph **3**

LIVE CHALLENGE

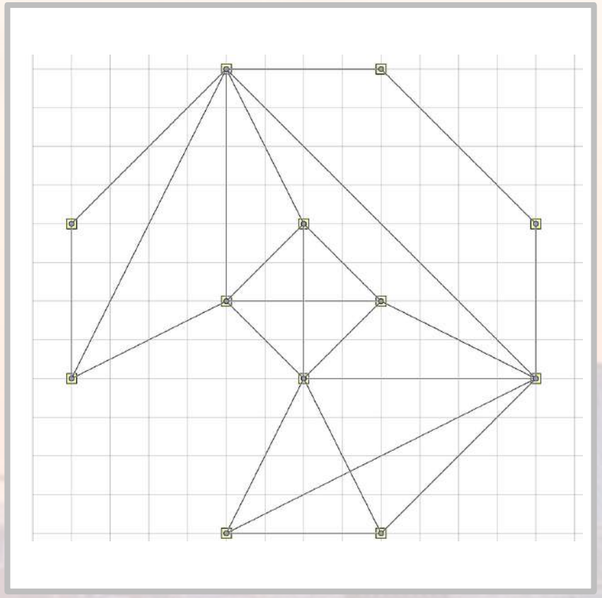
The Graphs



input

42 crossings (inv)

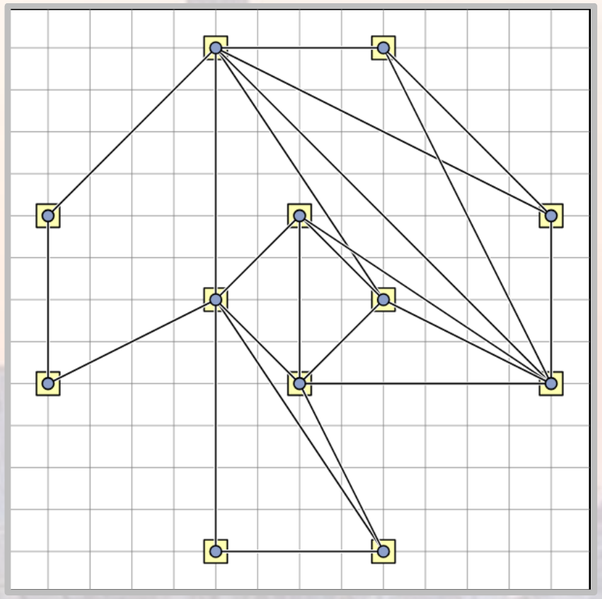
graph **3**



best manual

ThePointless

2 crossings



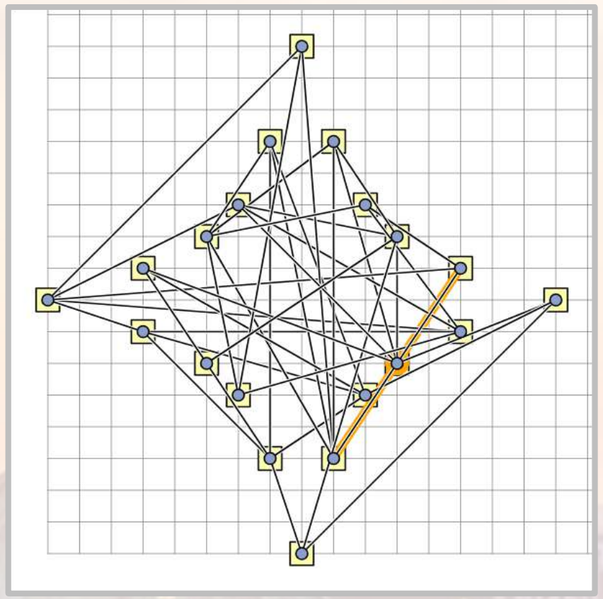
best automatic

Baseline

2 crossings

LIVE CHALLENGE

The Graphs



input

best manual

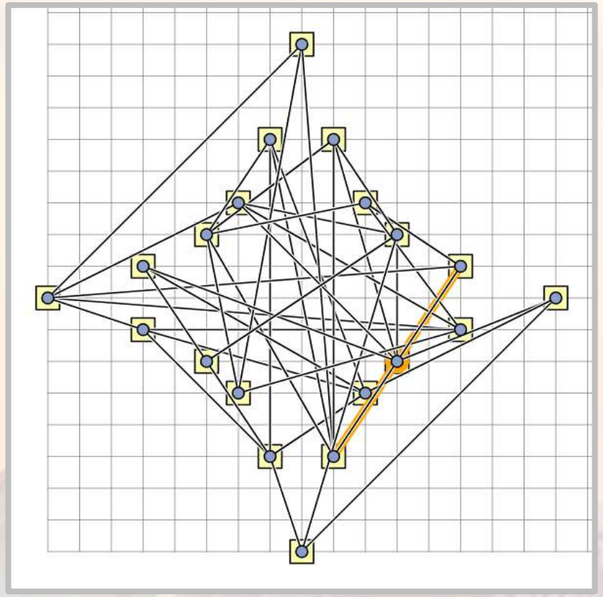
best automatic

274 crossings

graph **4**

LIVE CHALLENGE

The Graphs



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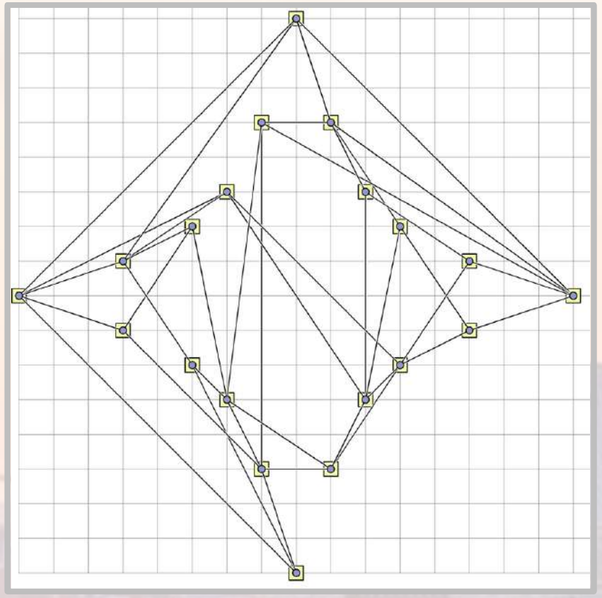


best manual

94_crossings

best automatic

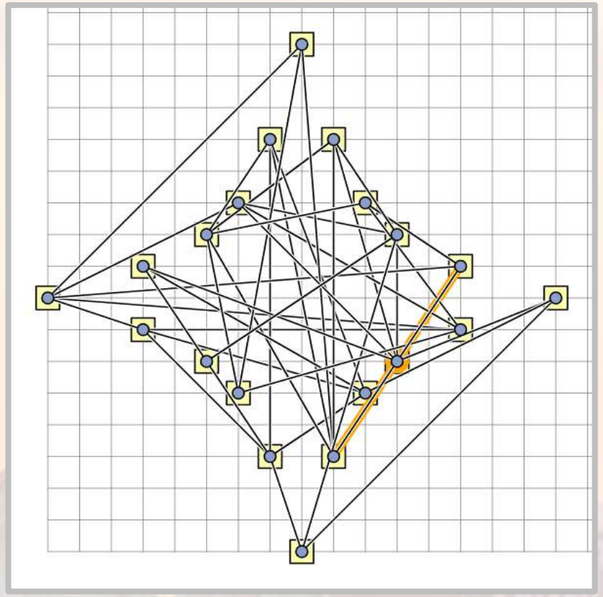
274 crossings

graph **4**

14 crossings

LIVE CHALLENGE

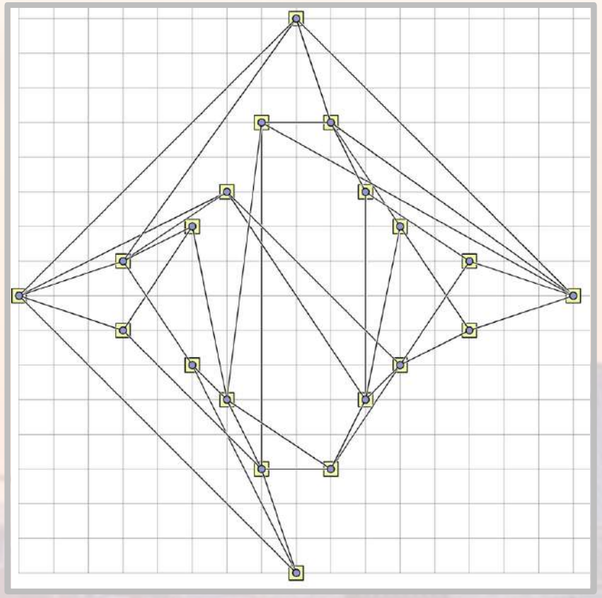
The Graphs



input

274 crossings

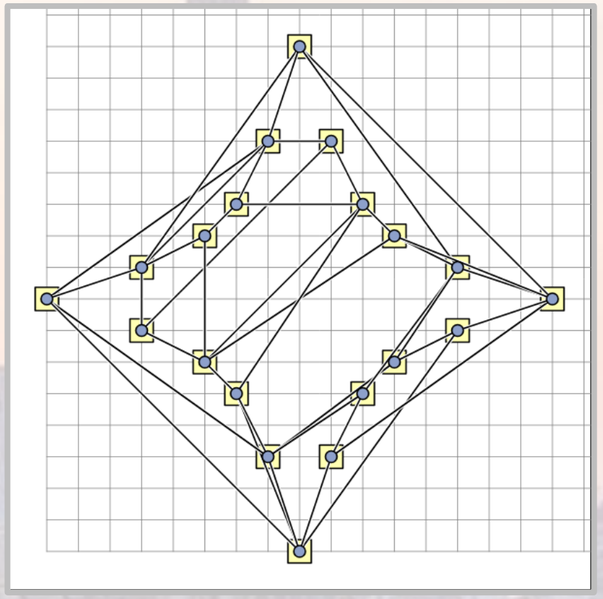
graph **4**



best manual

94_crossings

14 crossings



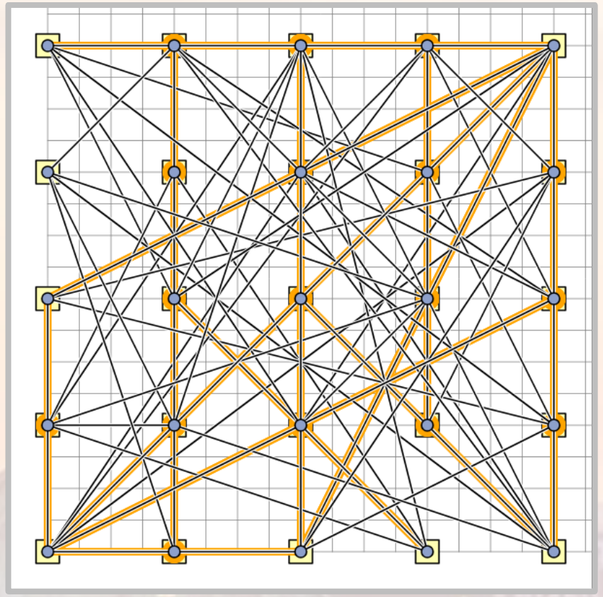
best automatic

Graph Gladiators

8 crossings

LIVE CHALLENGE

The Graphs



input

best manual

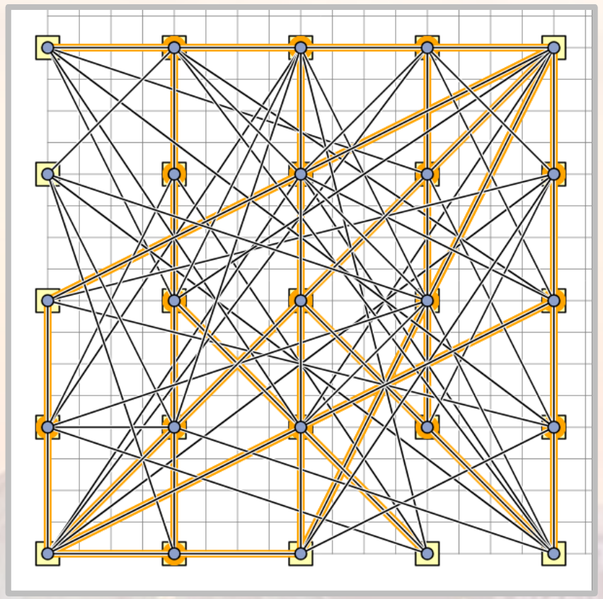
best automatic

3610 crossings

graph **5**

LIVE CHALLENGE

The Graphs



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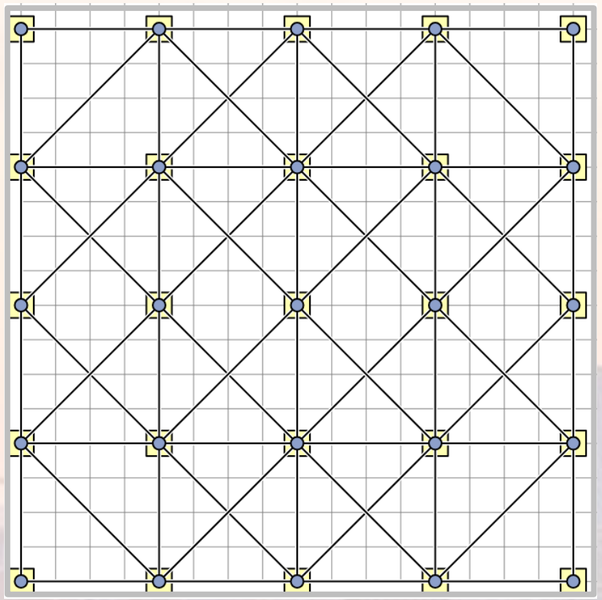


best manual

best automatic

NoFloodOfCrossingsPlea

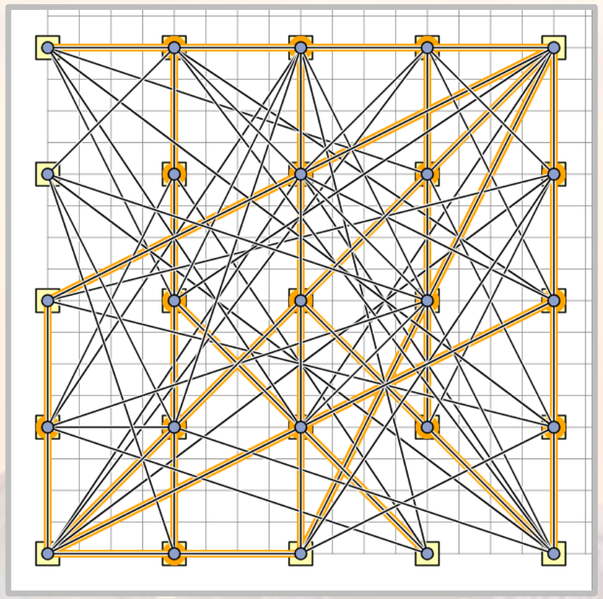
3610 crossings

12 crossings

graph **5**

LIVE CHALLENGE

The Graphs



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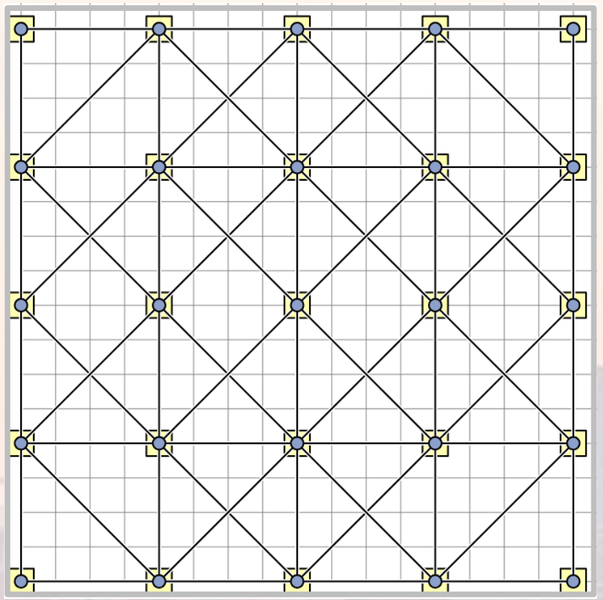
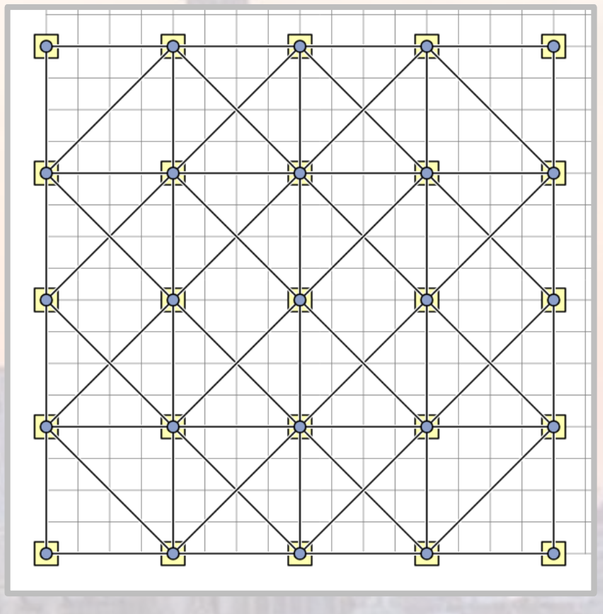


best manual

NoFloodOfCrossingsPlea

12 crossings



best automatic

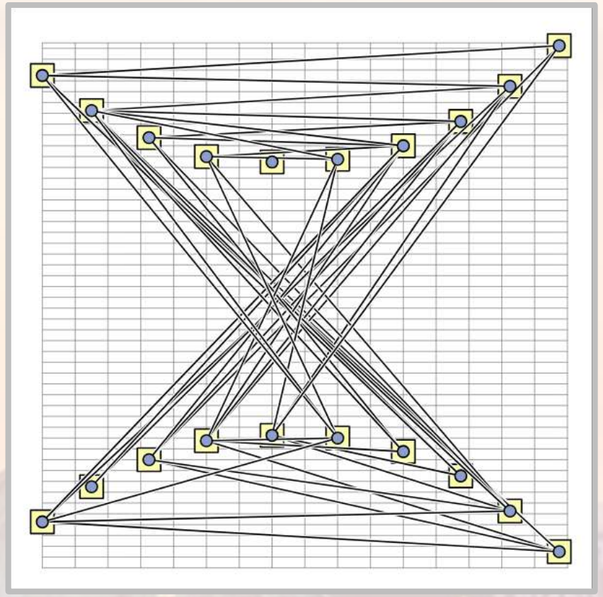
Baseline

12 crossings

3610 crossings

graph **5**

LIVE CHALLENGE
The Graphs



input

best manual

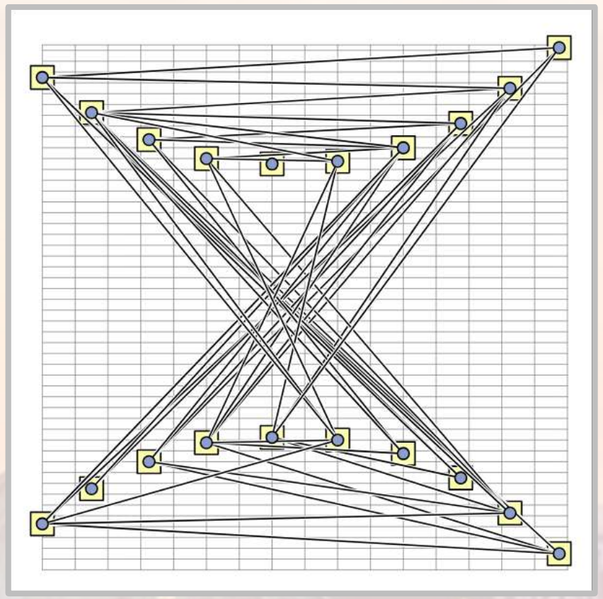
best automatic

240 crossings

graph **6**

LIVE CHALLENGE

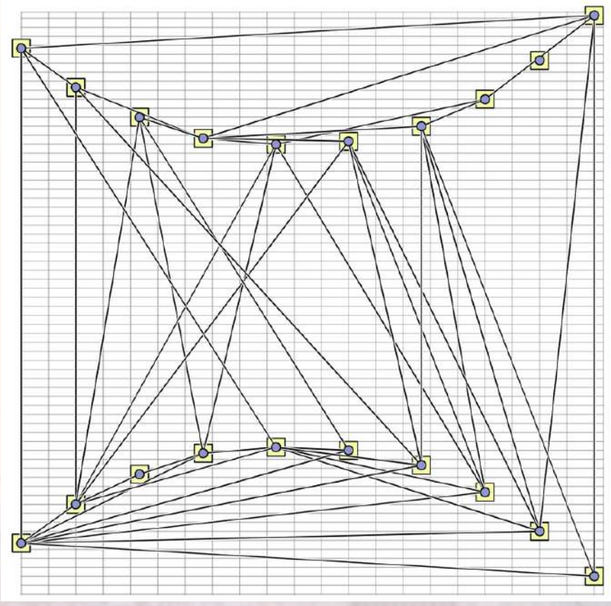
The Graphs



input

240 crossings

graph **6**



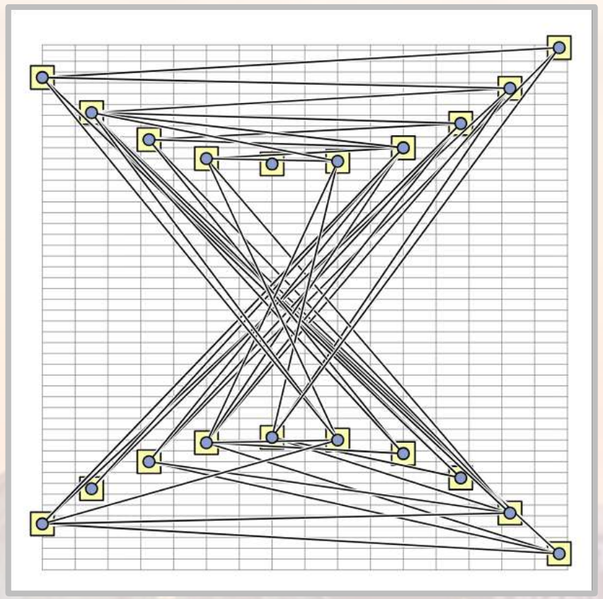
best manual

94_crossings

34 crossings

best automatic

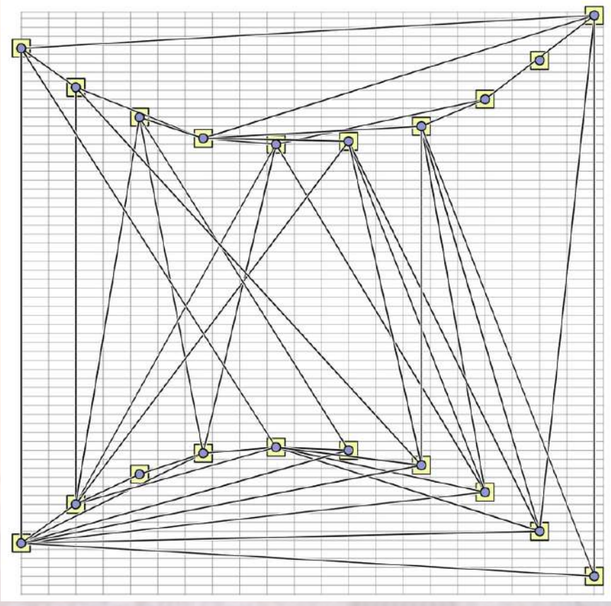
LIVE CHALLENGE
The Graphs



input

240 crossings

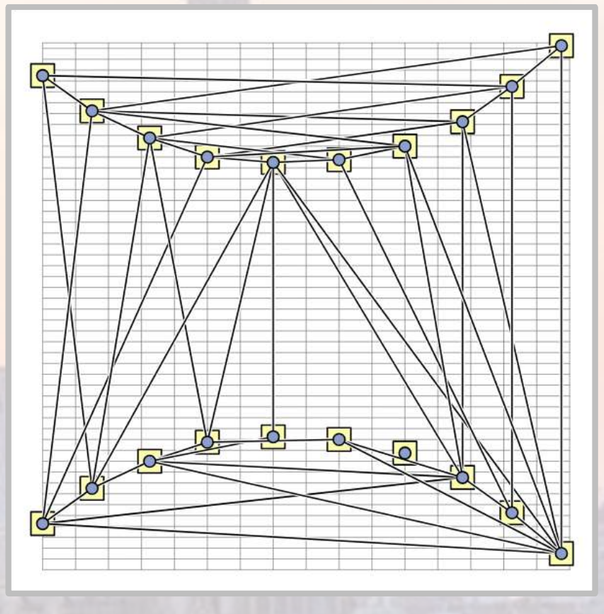
graph **6**



best manual

94_crossings

34 crossings



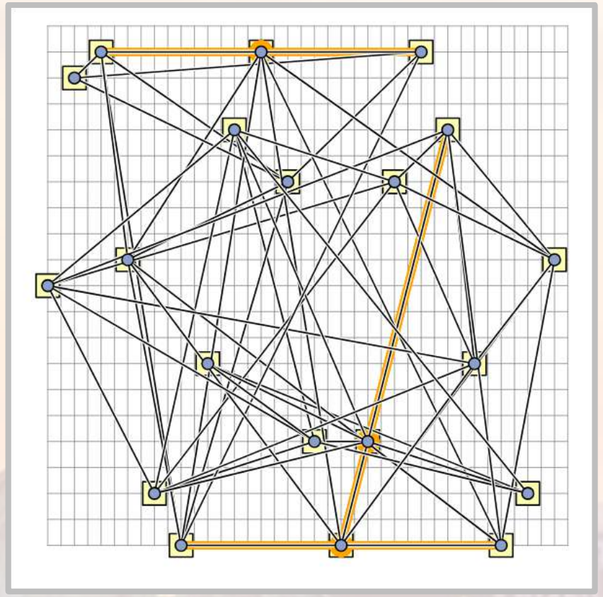
best automatic

OMeGA

24 crossings

LIVE CHALLENGE

The Graphs



input

best manual

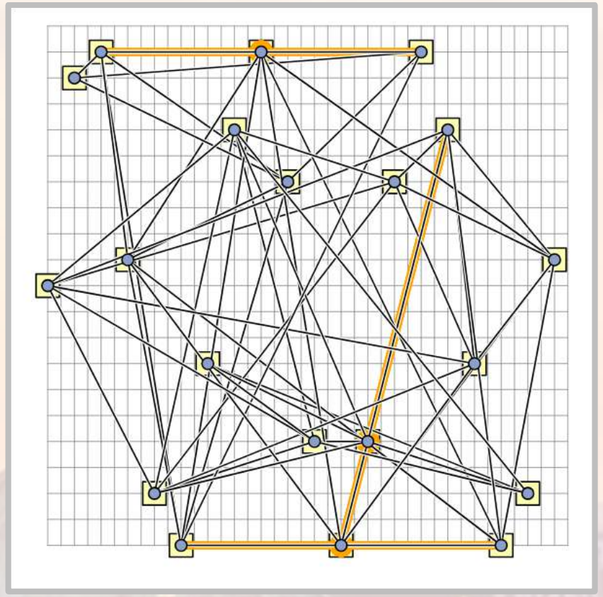
best automatic

570 crossings

graph **7**

LIVE CHALLENGE

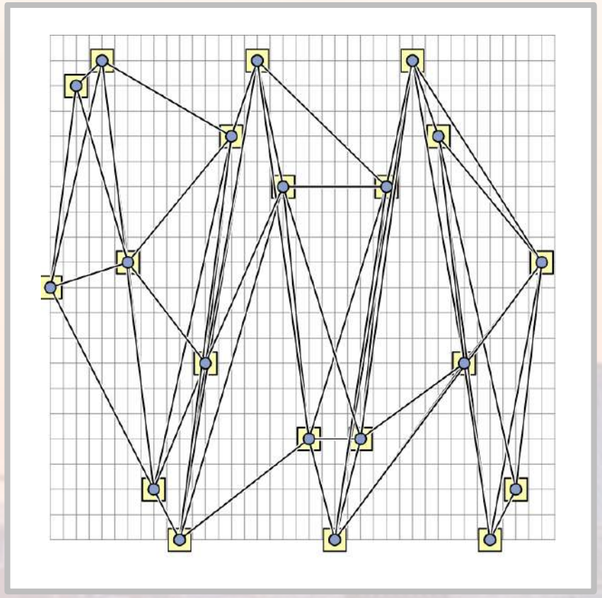
The Graphs



input

570 crossings

graph **7**



best manual

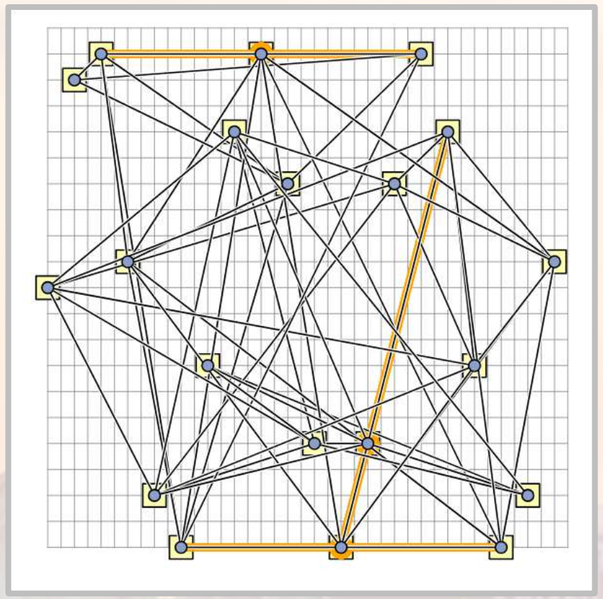
FPTourists

21 crossings

best automatic

LIVE CHALLENGE

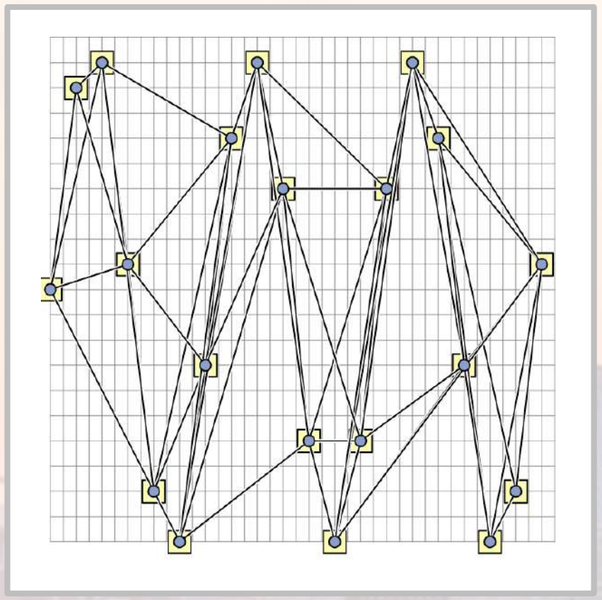
The Graphs



input

570 crossings

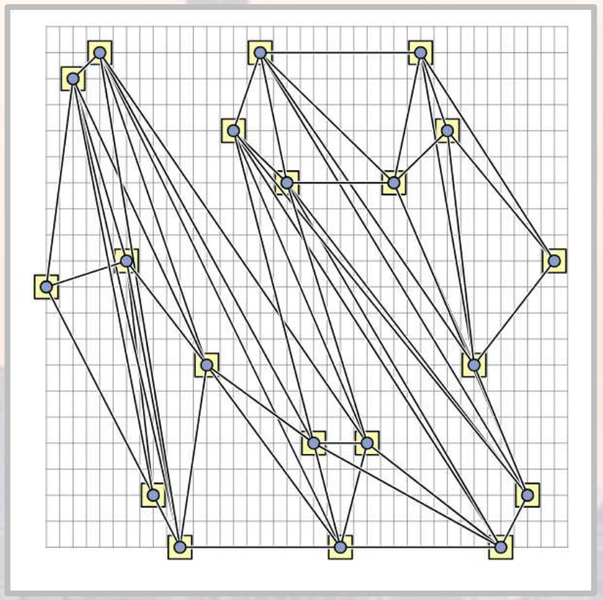
graph **7**



best manual

FPTourists

21 crossings



best automatic

Graph Gladiators

15 crossings

LIVE CHALLENGE

manual category

LIVE CHALLENGE
manual category

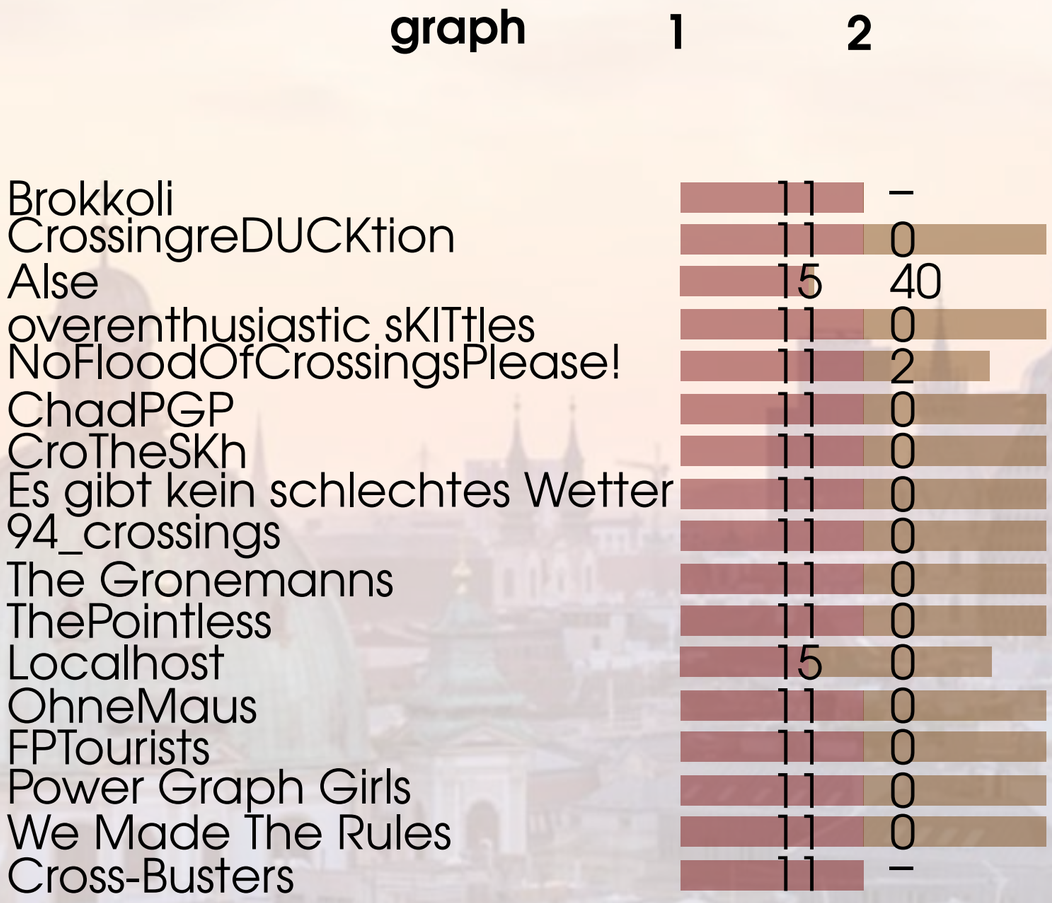
graph

Brokkoli
CrossingreDUCKtion
Alse
overenthusiastic sKITtles
NoFloodOfCrossingsPlease!
ChadPGP
CroTheSKh
Es gibt kein schlechtes Wetter
94_crossings
The Gronemanns
ThePointless
Localhost
OhneMaus
FPTourists
Power Graph Girls
We Made The Rules
Cross-Busters

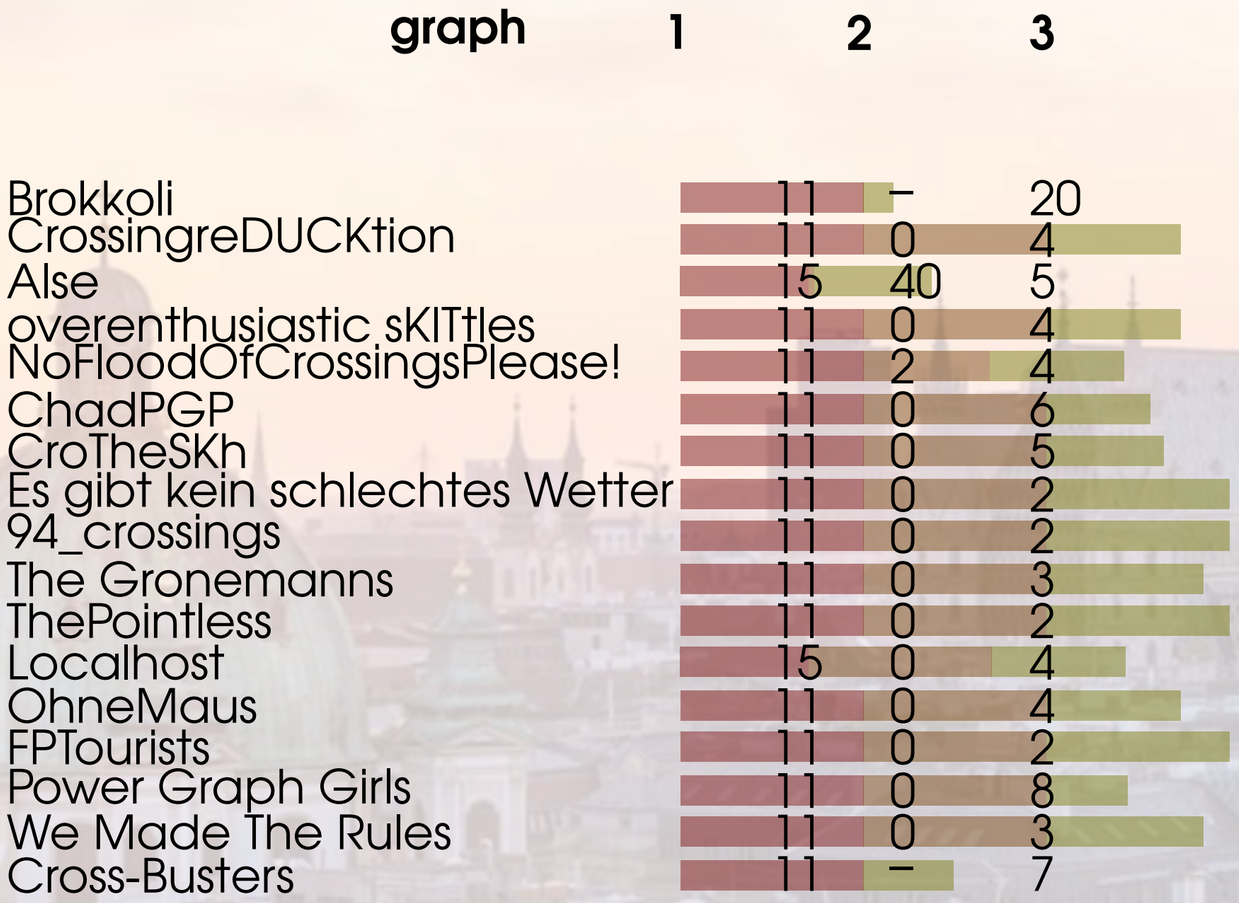
LIVE CHALLENGE
manual category

graph 1

LIVE CHALLENGE
manual category



LIVE CHALLENGE
manual category



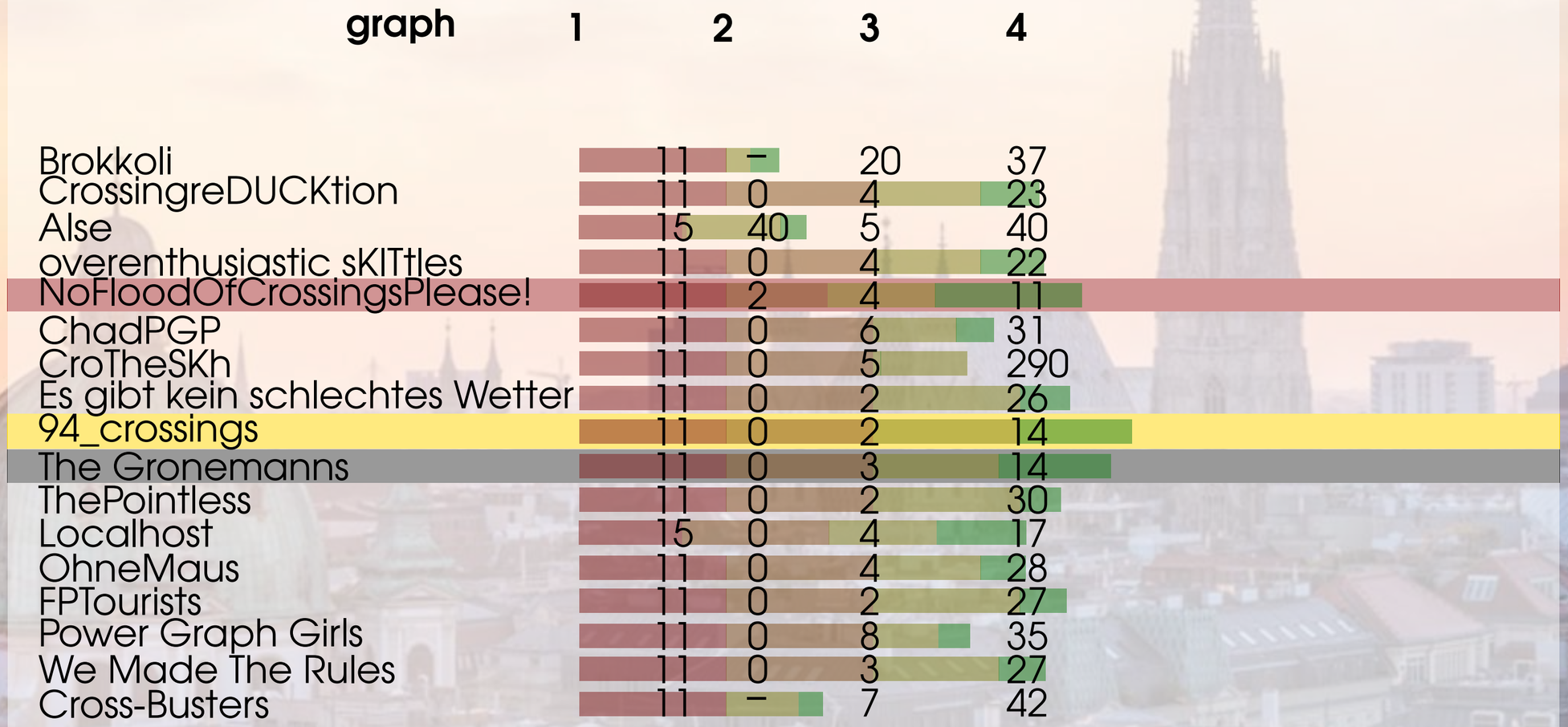
LIVE CHALLENGE
manual category

graph	1	2	3
Brokkoli	11	–	20
CrossingreDUCKtion	11	0	4
Alse	15	40	5
overenthusiastic sKITtles	11	0	4
NoFloodOfCrossingsPlease!	11	2	4
ChadPGP	11	0	6
CroTheSKh	11	0	5
Es gibt kein schlechtes Wetter	11	0	2
94_crossings	11	0	2
The Gronemanns	11	0	3
ThePointless	11	0	2
Localhost	15	0	4
OhneMaus	11	0	4
FPTourists	11	0	2
Power Graph Girls	11	0	8
We Made The Rules	11	0	3
Cross-Busters	11	–	7

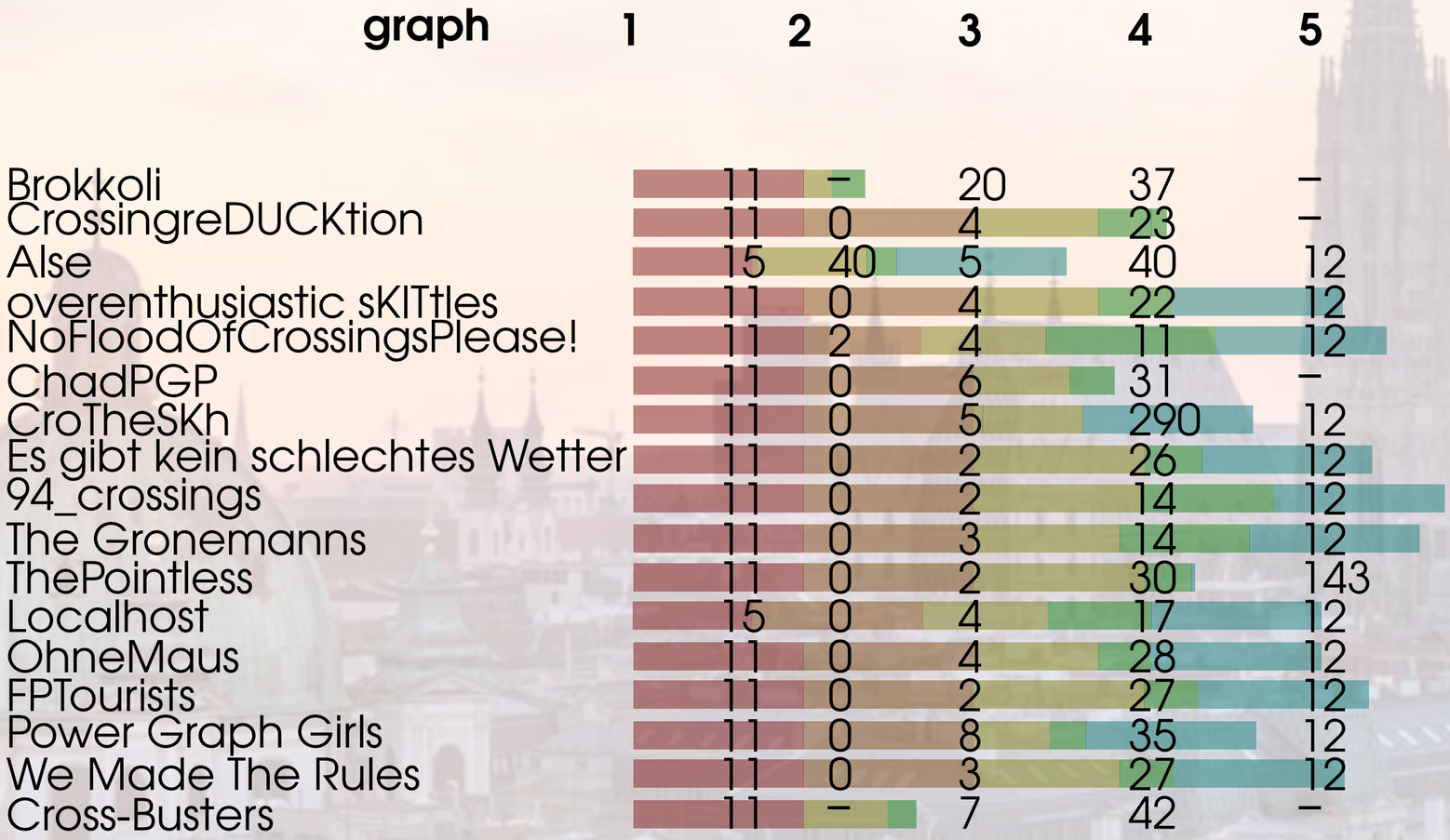
LIVE CHALLENGE
manual category

graph	1	2	3	4
Brokkoli	11	–	20	37
CrossingreDUCKtion	11	0	4	23
Alse	15	40	5	40
overenthusiastic sKITtles	11	0	4	22
NoFloodOfCrossingsPlease!	11	2	4	11
ChadPGP	11	0	6	31
CroTheSKh	11	0	5	290
Es gibt kein schlechtes Wetter	11	0	2	26
94_crossings	11	0	2	14
The Gronemanns	11	0	3	14
ThePointless	11	0	2	30
Localhost	15	0	4	17
OhneMaus	11	0	4	28
FPTourists	11	0	2	27
Power Graph Girls	11	0	8	35
We Made The Rules	11	0	3	27
Cross-Busters	11	–	7	42

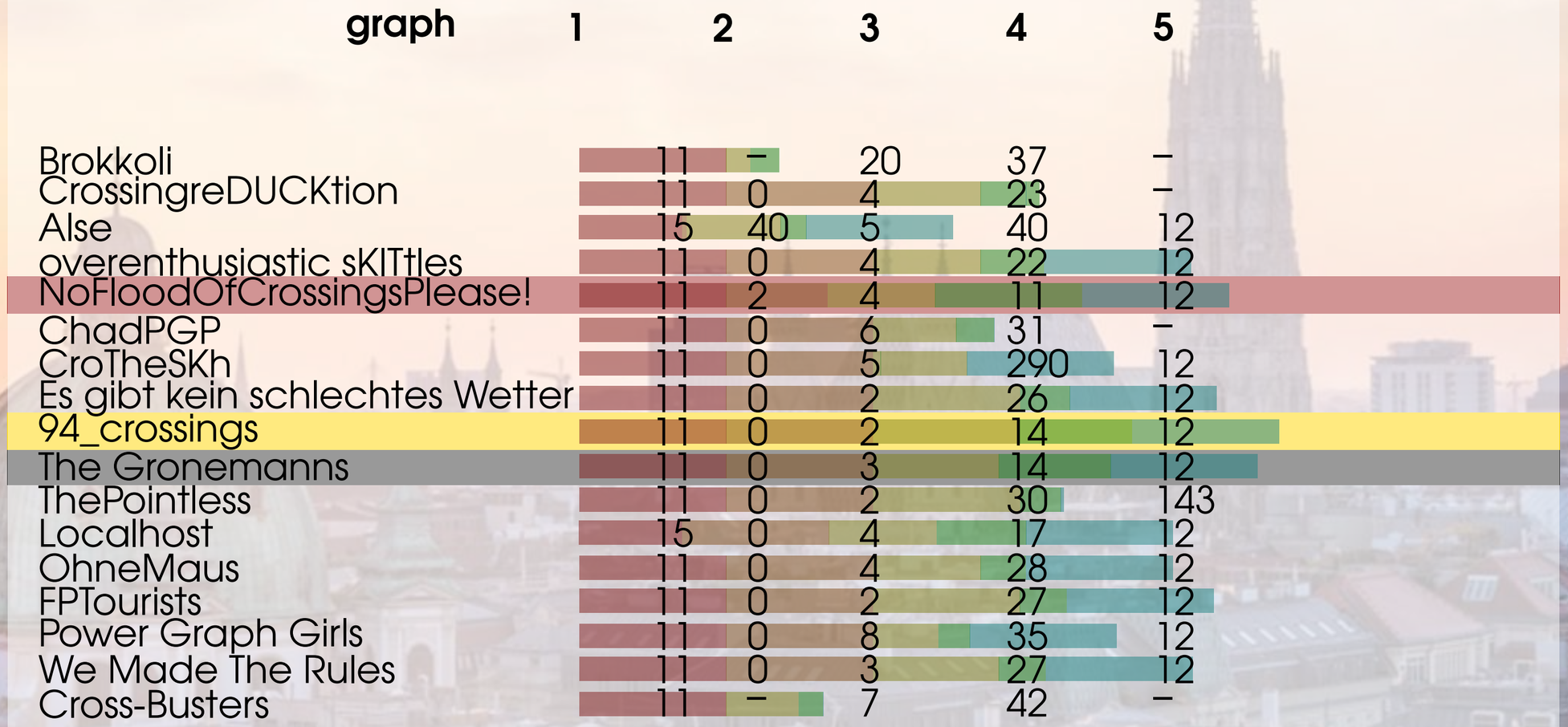
LIVE CHALLENGE
manual category



LIVE CHALLENGE
manual category



LIVE CHALLENGE
manual category



graph	1	2	3	4	5
Brokkoli	11	–	20	37	–
CrossingreDUCKtion	11	0	4	23	–
Alse	15	40	5	40	12
overenthusiastic sKITtles	11	0	4	22	12
NoFloodOfCrossingsPlease!	11	2	4	11	12
ChadPGP	11	0	6	31	–
CroTheSKh	11	0	5	290	12
Es gibt kein schlechtes Wetter	11	0	2	26	12
94_crossings	11	0	2	14	12
The Gronemanns	11	0	3	14	12
ThePointless	11	0	2	30	143
Localhost	15	0	4	17	12
OhneMaus	11	0	4	28	12
FPTourists	11	0	2	27	12
Power Graph Girls	11	0	8	35	12
We Made The Rules	11	0	3	27	12
Cross-Busters	11	–	7	42	–

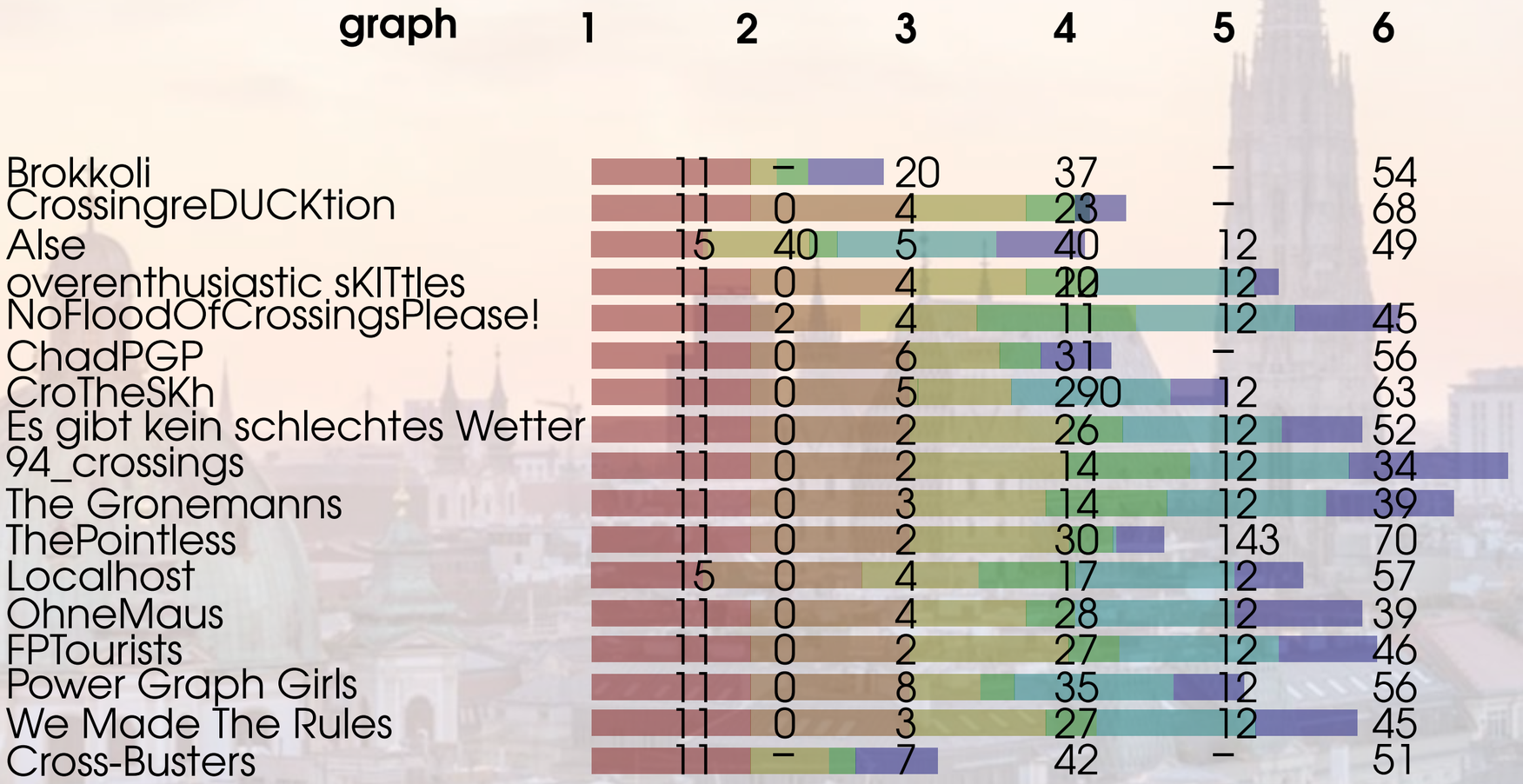
LIVE CHALLENGE
manual category

graph	1	2	3	4	5
Brokkoli	11	–	20	37	–
CrossingreDUCKtion					
Alse					
overenthusiastic sKITtles					
NoFloodOfCrossingsPlease!					
ChadPGP					
CroTheSKh					
Es gibt kein schlechtes Wetter					
94_crossings					
The Gronemanns					
ThePointless					
Localhost					
OhneMaus					
FPTourists					
Power Graph Girls					
We Made The Rules					
Cross-Busters	11	–	7	42	–

LIVE CHALLENGE
manual category

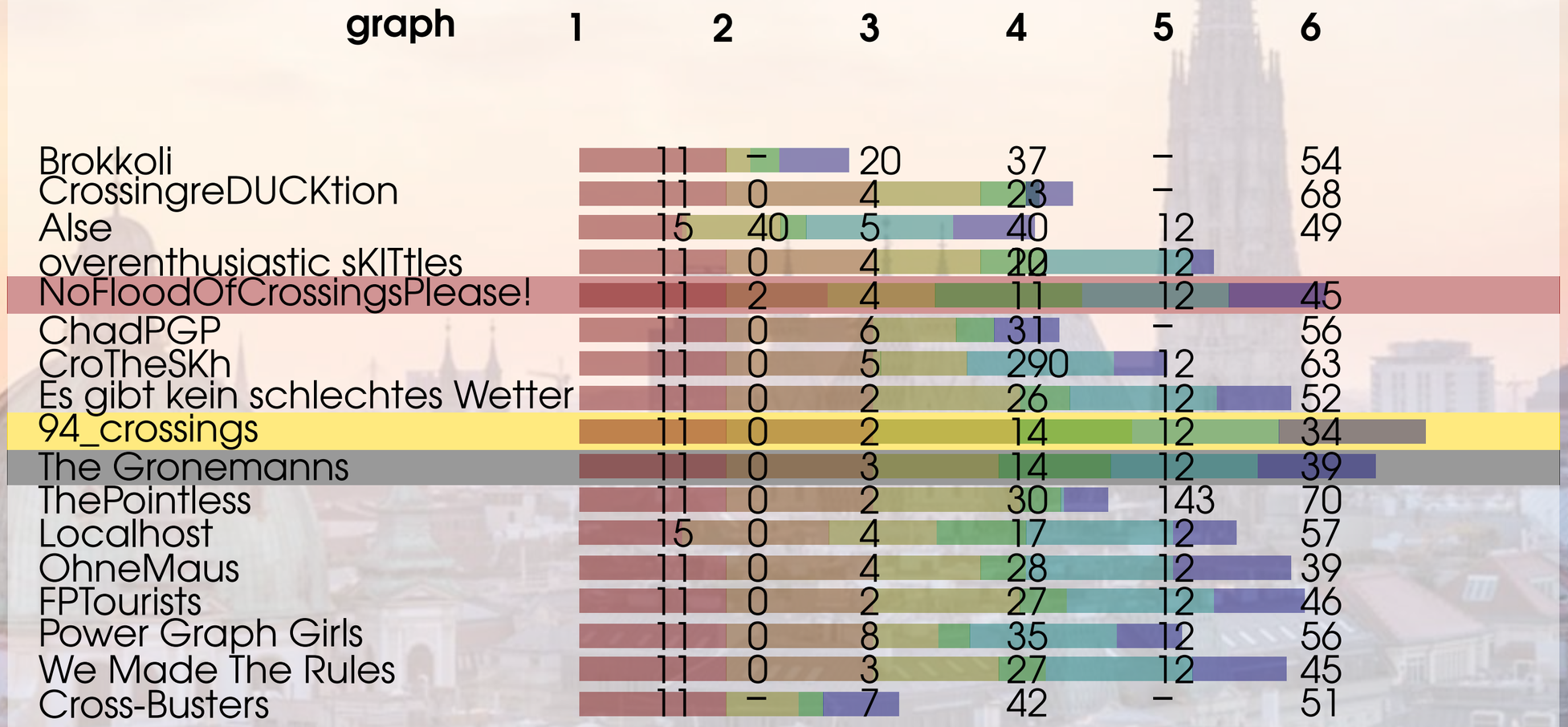
graph	1	2	3	4	5
Brokkoli	11	–	20	37	–
CrossingreDUCKtion					
Alse					
overenthusiastic sKITtles					
NoFloodOfCrossingsPlease!					
ChadPGP					
CroTheSKh					
Es gibt kein schlechtes Wetter					
94_crossings					
The Gronemanns					
ThePointless					
Localhost					
OhneMaus					
FPTourists					
Power Graph Girls					
We Made The Rules					
Cross-Busters	11	–	7	42	–

LIVE CHALLENGE
manual category



graph	1	2	3	4	5	6
Brokkoli	11	–	20	37	–	54
CrossingreDUCKtion	11	0	4	23	–	68
Alse	15	40	5	40	12	49
overenthusiastic sKITtles	11	0	4	20	12	
NoFloodOfCrossingsPlease!	11	2	4	11	12	45
ChadPGP	11	0	6	31	–	56
CroTheSKh	11	0	5	290	12	63
Es gibt kein schlechtes Wetter	11	0	2	26	12	52
94_crossings	11	0	2	14	12	34
The Gronemanns	11	0	3	14	12	39
ThePointless	11	0	2	30	143	70
Localhost	15	0	4	17	12	57
OhneMaus	11	0	4	28	12	39
FPTourists	11	0	2	27	12	46
Power Graph Girls	11	0	8	35	12	56
We Made The Rules	11	0	3	27	12	45
Cross-Busters	11	–	7	42	–	51

LIVE CHALLENGE
manual category



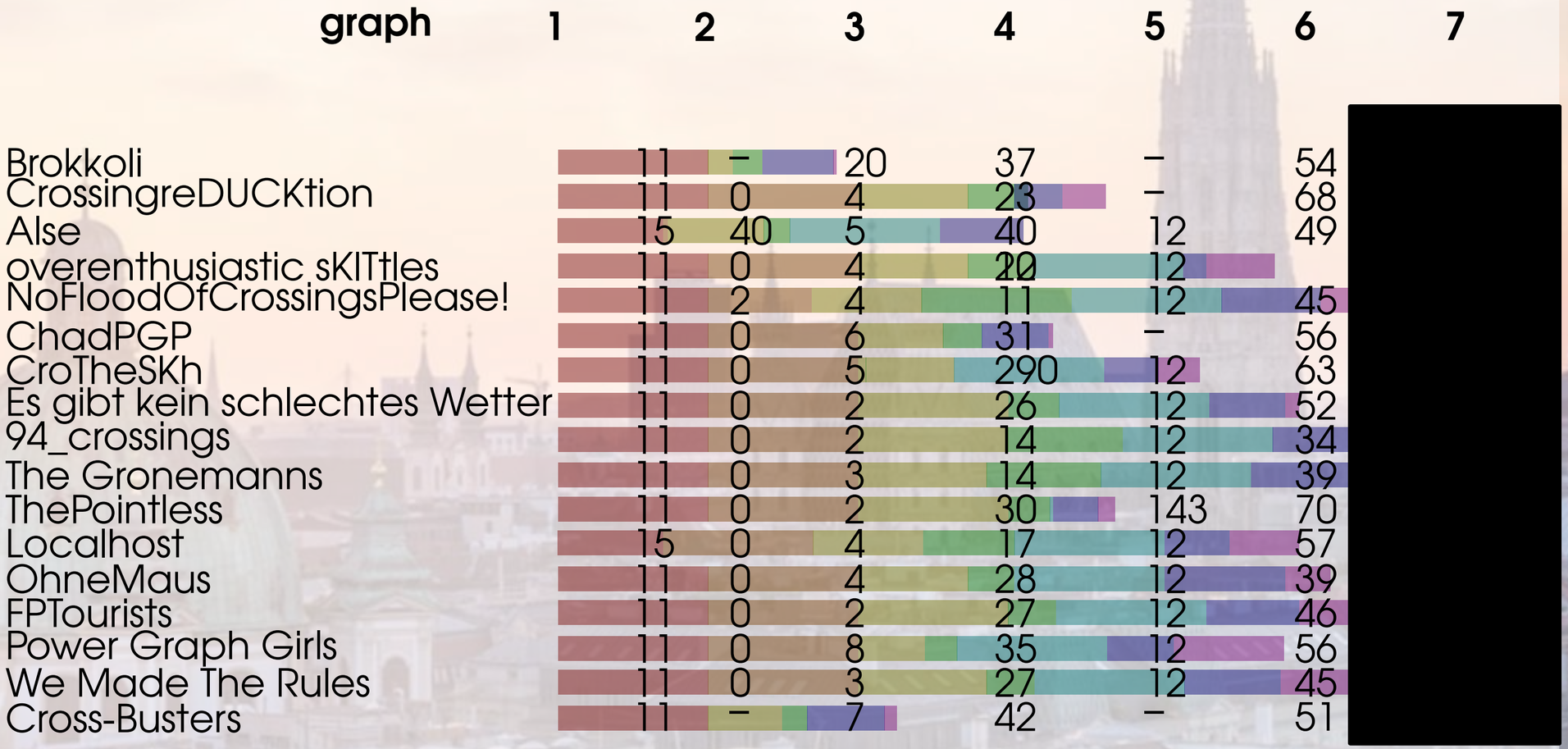
graph	1	2	3	4	5	6
Brokkoli	11	–	20	37	–	54
CrossingreDUCKtion	11	0	4	23	–	68
Alse	15	40	5	40	12	49
overenthusiastic sKITtles	11	0	4	20	12	
NoFloodOfCrossingsPlease!	11	2	4	11	12	45
ChadPGP	11	0	6	31	–	56
CroTheSKh	11	0	5	290	12	63
Es gibt kein schlechtes Wetter	11	0	2	26	12	52
94_crossings	11	0	2	14	12	34
The Gronemanns	11	0	3	14	12	39
ThePointless	11	0	2	30	143	70
Localhost	15	0	4	17	12	57
OhneMaus	11	0	4	28	12	39
FPTourists	11	0	2	27	12	46
Power Graph Girls	11	0	8	35	12	56
We Made The Rules	11	0	3	27	12	45
Cross-Busters	11	–	7	42	–	51

LIVE CHALLENGE
manual category

graph	1	2	3	4	5	6

Brokkoli
CrossingreDUCKtion
Alse
overenthusiastic sKITtles
NoFloodOfCrossingsPlease!
ChadPGP
CroTheSKh
Es gibt kein schlechtes Wetter
94_crossings
The Gronemanns
ThePointless
Localhost
OhneMaus
FPTourists
Power Graph Girls
We Made The Rules
Cross-Busters

LIVE CHALLENGE
manual category



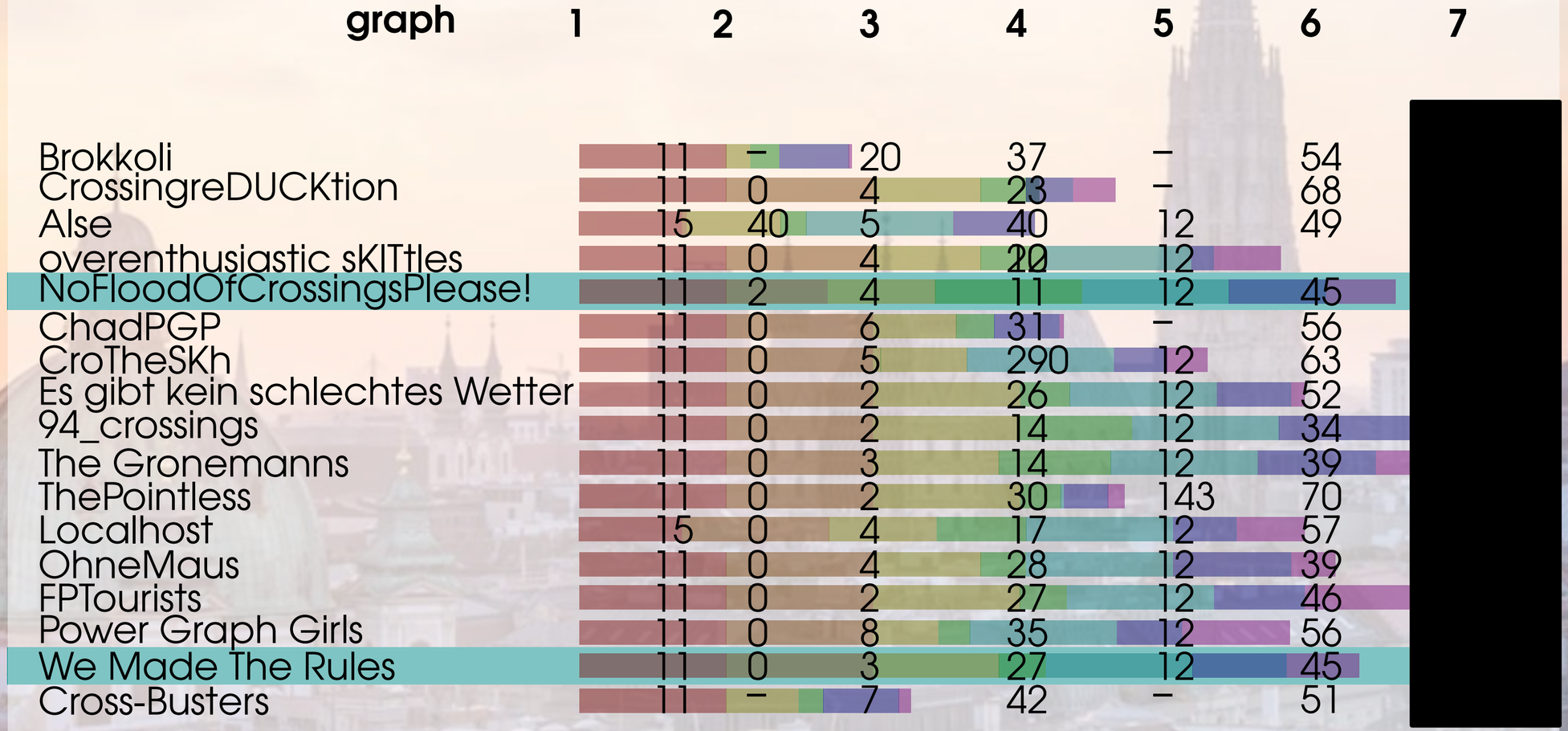
LIVE CHALLENGE
manual category

graph	1	2	3	4	5	6	7
Brokkoli	11	–	20	37	–	54	
CrossingreDUCKtion	11	0	4	23	–	68	
Alse	15	40	5	40	12	49	
overenthusiastic sKITtles	11	0	4	20	12		
NoFloodOfCrossingsPlease!	11	2	4	11	12	45	
ChadPGP	11	0	6	31	–	56	
CroTheSKh	11	0	5	290	12	63	
Es gibt kein schlechtes Wetter	11	0	2	26	12	52	
94_crossings	11	0	2	14	12	34	
The Gronemanns	11	0	3	14	12	39	
ThePointless	11	0	2	30	143	70	
Localhost	15	0	4	17	12	57	
OhneMaus	11	0	4	28	12	39	
FPTourists	11	0	2	27	12	46	
Power Graph Girls	11	0	8	35	12	56	
We Made The Rules	11	0	3	27	12	45	
Cross-Busters	11	–	7	42	–	51	

LIVE CHALLENGE
manual category

graph	1	2	3	4	5	6	7
Brokkoli							
CrossingreDUCKtion							
Alse							
overenthusiastic sKITtles							
NoFloodOfCrossingsPleas							
ChadPGP							
CroTheSKh							
Es gibt kein schlechtes We							
94_crossings							
The Gronemanns							
ThePointless							
Localhost							
OhneMaus							
FPTourists							
Power Graph Girls							
We Made The Rules							
Cross-Busters							

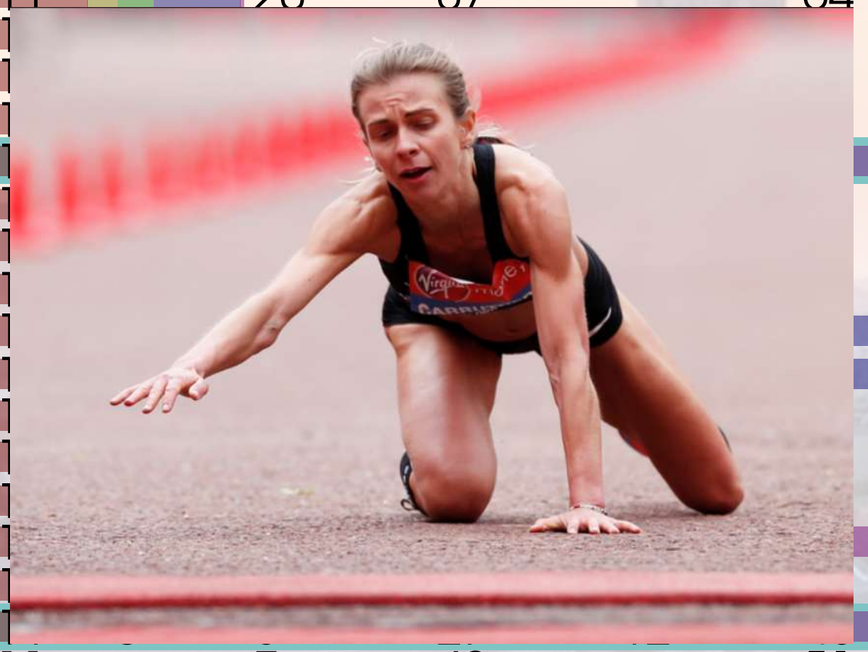
LIVE CHALLENGE
manual category



graph	1	2	3	4	5	6	7
Brokkoli	11	–	20	37	–	54	
CrossingreDUCKtion	11	0	4	23	–	68	
Alse	15	40	5	40	12	49	
overenthusiastic sKITtles	11	0	4	20	12		
NoFloodOfCrossingsPlease!	11	2	4	11	12	45	
ChadPGP	11	0	6	31	–	56	
CroTheSKh	11	0	5	290	12	63	
Es gibt kein schlechtes Wetter	11	0	2	26	12	52	
94_crossings	11	0	2	14	12	34	
The Gronemanns	11	0	3	14	12	39	
ThePointless	11	0	2	30	143	70	
Localhost	15	0	4	17	12	57	
OhneMaus	11	0	4	28	12	39	
FPTourists	11	0	2	27	12	46	
Power Graph Girls	11	0	8	35	12	56	
We Made The Rules	11	0	3	27	12	45	
Cross-Busters	11	–	7	42	–	51	

LIVE CHALLENGE
manual category

graph	1	2	3	4	5	6	7
Brokkoli	11	–	20	37	–	54	
CrossingreDUCKtion							
Alse							
overenthusiastic sKITtles							
NoFloodOfCrossingsPlease!							
ChadPGP							
CroTheSKh							
Es gibt kein schlechtes Wetter							
94_crossings							
The Gronemanns							
ThePointless							
Localhost							
OhneMaus							
FPTourists							
Power Graph Girls							
We Made The Rules							
Cross-Busters	11	–	7	42	–	51	



LIVE CHALLENGE
manual category

graph	1	2	3	4	5	6	7

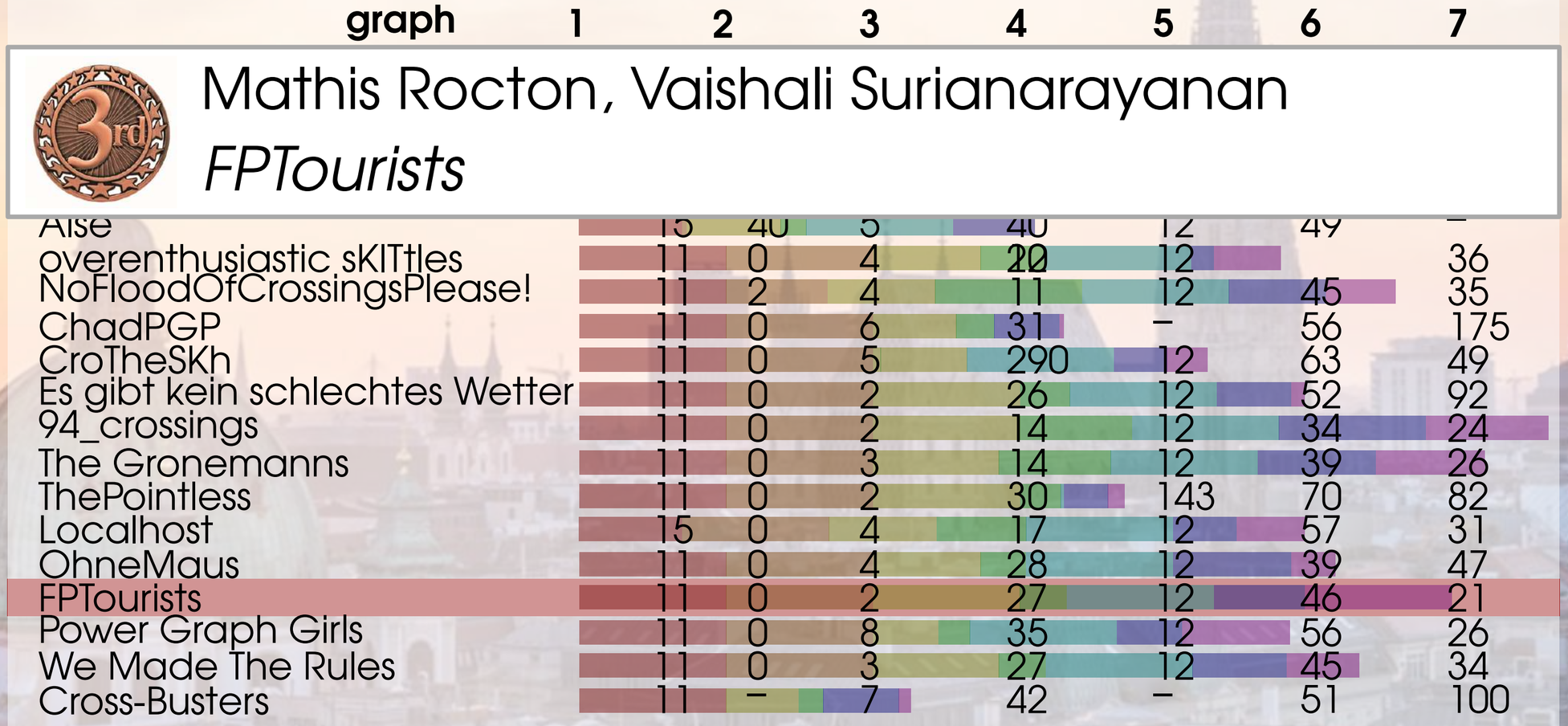
Brokkoli
CrossingreDUCKtion
Alse
overenthusiastic sKITtles
NoFloodOfCrossingsPlease!
ChadPGP
CroTheSKh
Es gibt kein schlechtes Wetter
94_crossings
The Gronemanns
ThePointless
Localhost
OhneMaus
FPTourists
Power Graph Girls
We Made The Rules
Cross-Busters

LIVE CHALLENGE
manual category

graph	1	2	3	4	5	6	7

Brokkoli
CrossingreDUCKtion
Alse
overenthusiastic sKITtles
NoFloodOfCrossingsPlease!
ChadPGP
CroTheSKh
Es gibt kein schlechtes Wetter
94_crossings
The Gronemanns
ThePointless
Localhost
OhneMaus
FPTourists
Power Graph Girls
We Made The Rules
Cross-Busters

LIVE CHALLENGE
manual category



graph	1	2	3	4	5	6	7
Mathis Rocton, Vaishali Surianarayanan							
FPTourists							
Aise	15	40	5	40	12	49	–
overenthusiastic sKITtles	11	0	4	20	12		36
NoFloodOfCrossingsPlease!	11	2	4	11	12	45	35
ChadPGP	11	0	6	31	–	56	175
CroTheSKh	11	0	5	290	12	63	49
Es gibt kein schlechtes Wetter	11	0	2	26	12	52	92
94_crossings	11	0	2	14	12	34	24
The Gronemanns	11	0	3	14	12	39	26
ThePointless	11	0	2	30	143	70	82
Localhost	15	0	4	17	12	57	31
OhneMaus	11	0	4	28	12	39	47
FPTourists	11	0	2	27	12	46	21
Power Graph Girls	11	0	8	35	12	56	26
We Made The Rules	11	0	3	27	12	45	34
Cross-Busters	11	–	7	42	–	51	100

LIVE CHALLENGE
manual category

graph	1	2	3	4	5	6	7

Brokkoli
CrossingreDUCKtion
Alse
overenthusiastic sKITtles
NoFloodOfCrossingsPlease!
ChadPGP
CroTheSKh
Es gibt kein schlechtes Wetter
94_crossings
The Gronemanns
ThePointless
Localhost
OhneMaus
FPTourists
Power Graph Girls
We Made The Rules
Cross-Busters

LIVE CHALLENGE
manual category

graph	1	2	3	4	5	6	7
Aise	15	40	5	40	12	49	–
overenthusiastic sKITtles	11	0	4	20	12		36
NoFloodOfCrossingsPlease!	11	2	4	11	12	45	35
ChadPGP	11	0	6	31	–	56	175
CroTheSKh	11	0	5	290	12	63	49
Es gibt kein schlechtes Wetter	11	0	2	26	12	52	92
94_crossings	11	0	2	14	12	34	24
The Gronemanns	11	0	3	14	12	39	26
ThePointless	11	0	2	30	143	70	82
Localhost	15	0	4	17	12	57	31
OhneMaus	11	0	4	28	12	39	47
FPTourists	11	0	2	27	12	46	21
Power Graph Girls	11	0	8	35	12	56	26
We Made The Rules	11	0	3	27	12	45	34
Cross-Busters	11	–	7	42	–	51	100

LIVE CHALLENGE
manual category

gd24

Tim Hegemann, Johannes Zink

94_crossings (with 97 crossings)

graph	1	2	3	4	5	6	7
Aise	15	40	5	40	12	49	–
overenthusiastic sKITtles	11	0	4	20	12		36
NoFloodOfCrossingsPlease!	11	2	4	11	12	45	35
ChadPGP	11	0	6	31	–	56	175
CroTheSKh	11	0	5	290	12	63	49
Es gibt kein schlechtes Wetter	11	0	2	26	12	52	92
94_crossings	11	0	2	14	12	34	24
The Gronemanns	11	0	3	14	12	39	26
ThePointless	11	0	2	30	143	70	82
Localhost	15	0	4	17	12	57	31
OhneMaus	11	0	4	28	12	39	47
FPTourists	11	0	2	27	12	46	21
Power Graph Girls	11	0	8	35	12	56	26
We Made The Rules	11	0	3	27	12	45	34
Cross-Busters	11	–	7	42	–	51	100

LIVE CHALLENGE

The Graphs

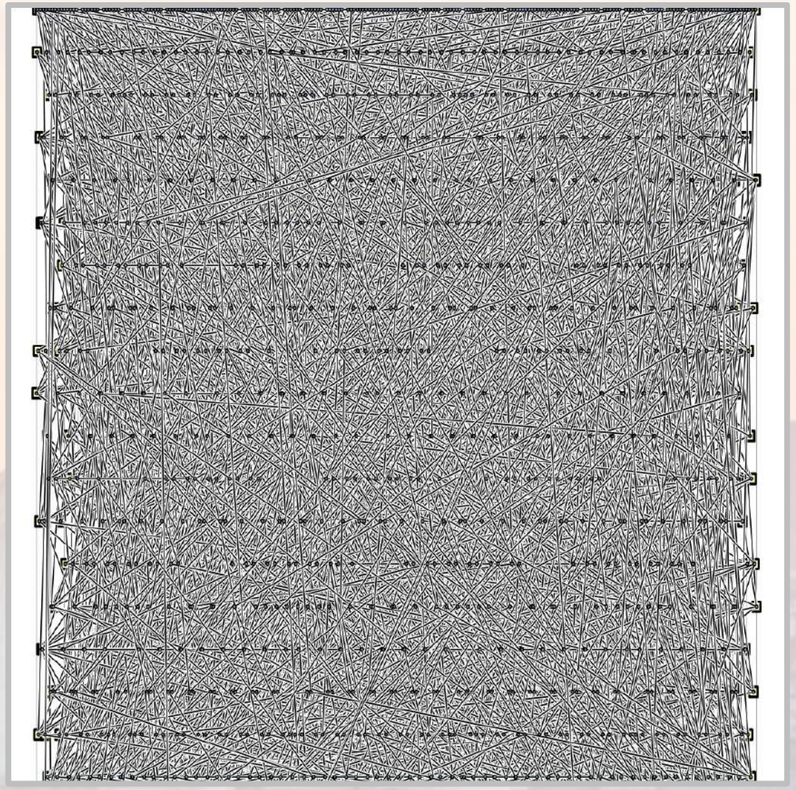
input

best automatic

graph **8**

LIVE CHALLENGE

The Graphs



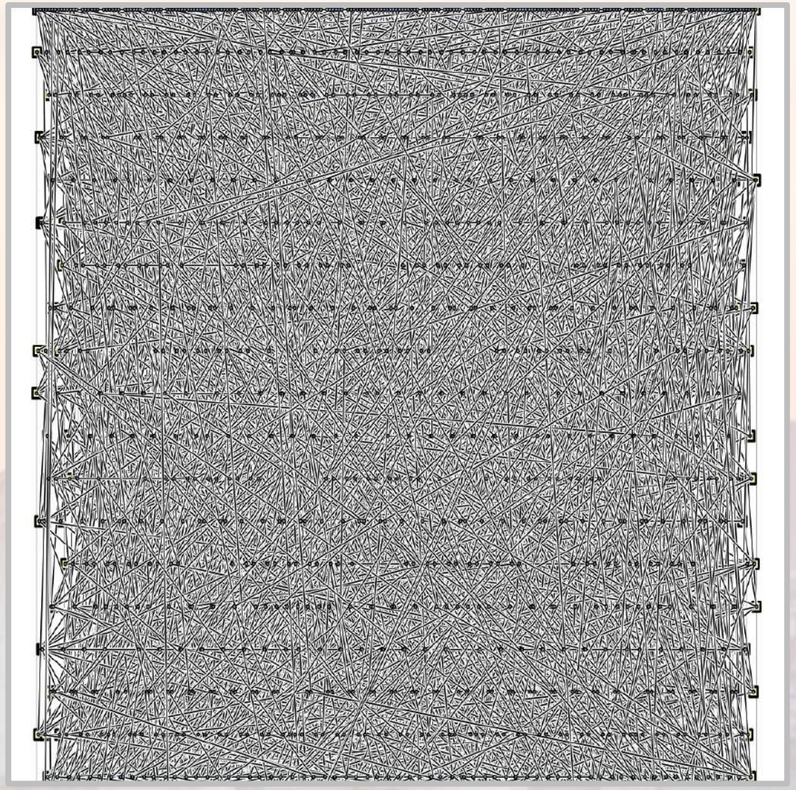
input

best automatic

graph **8**

LIVE CHALLENGE

The Graphs



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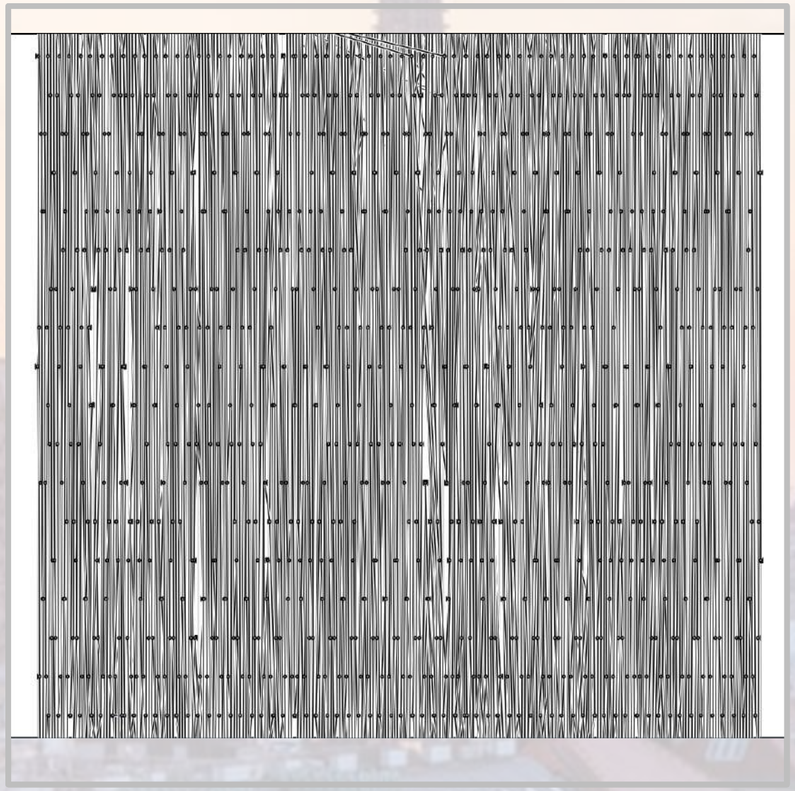
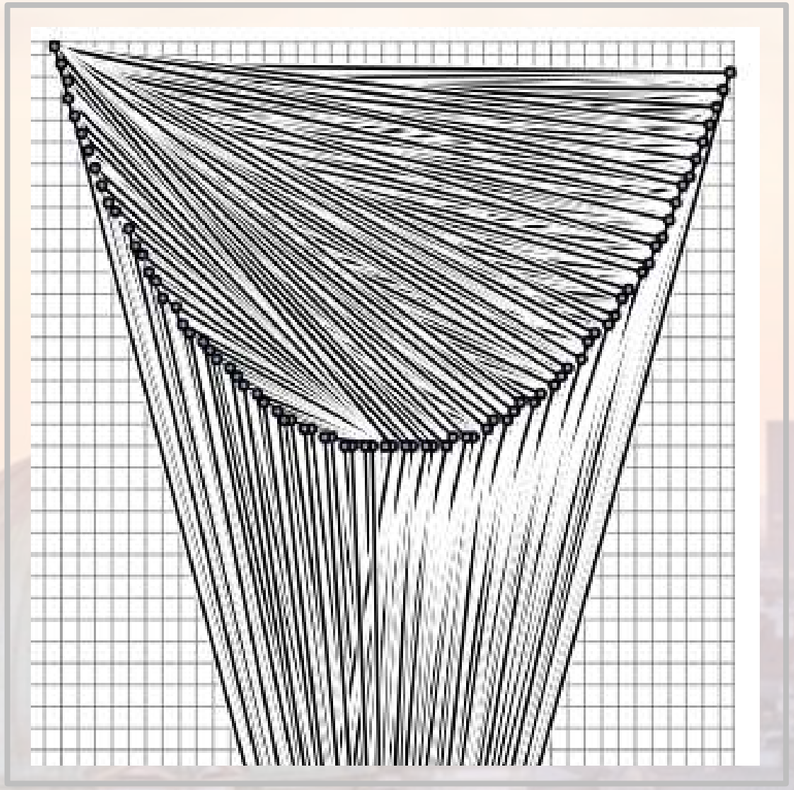
graph **8**



best automatic
OMEGA
4468 crossings

LIVE CHALLENGE

The Graphs



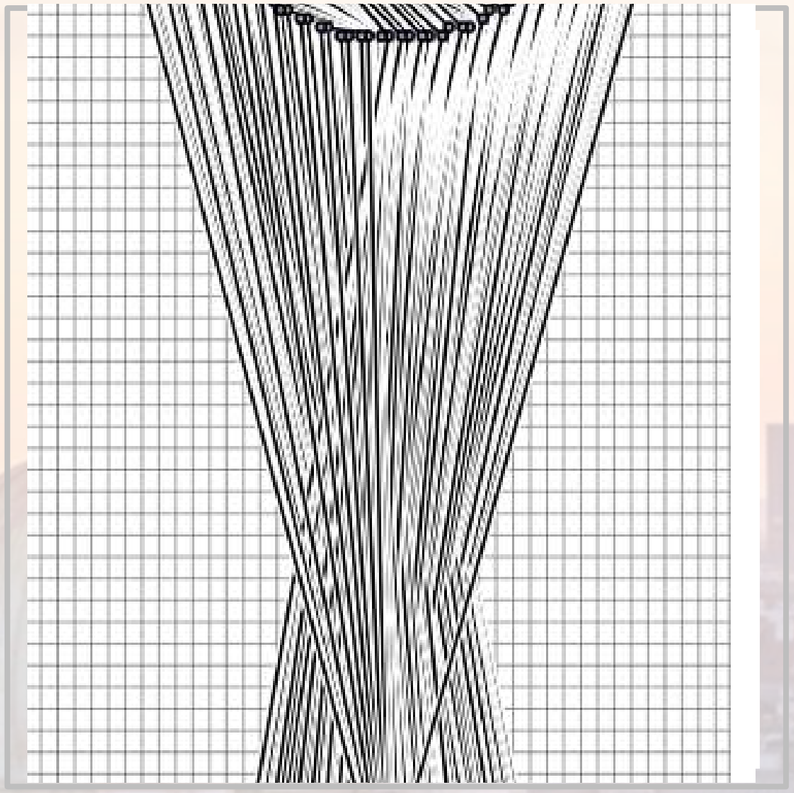
input

graph **9**

best automatic

LIVE CHALLENGE

The Graphs



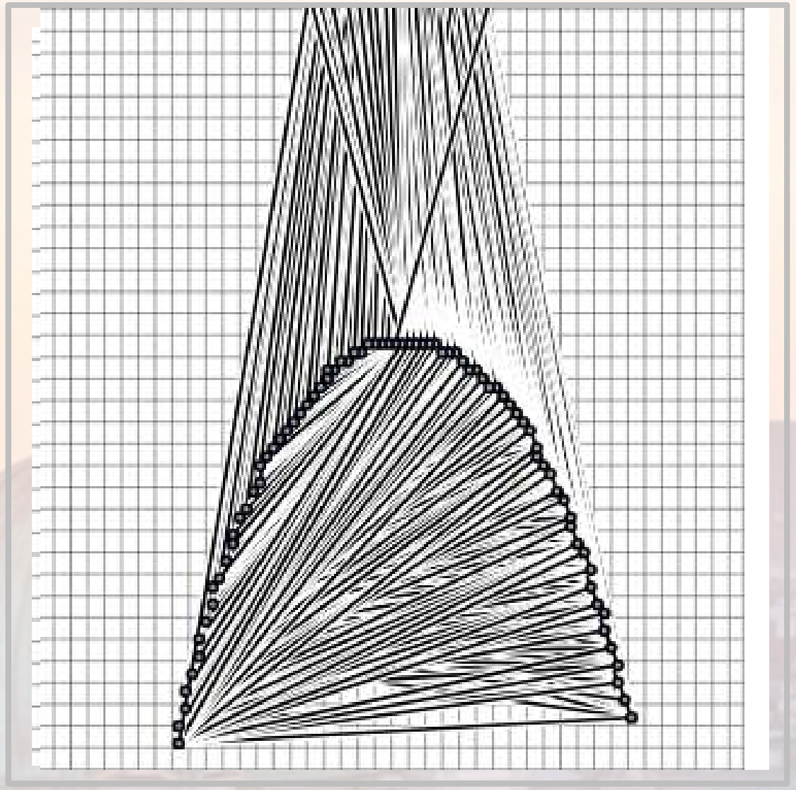
input

best automatic

graph **9**

LIVE CHALLENGE

The Graphs



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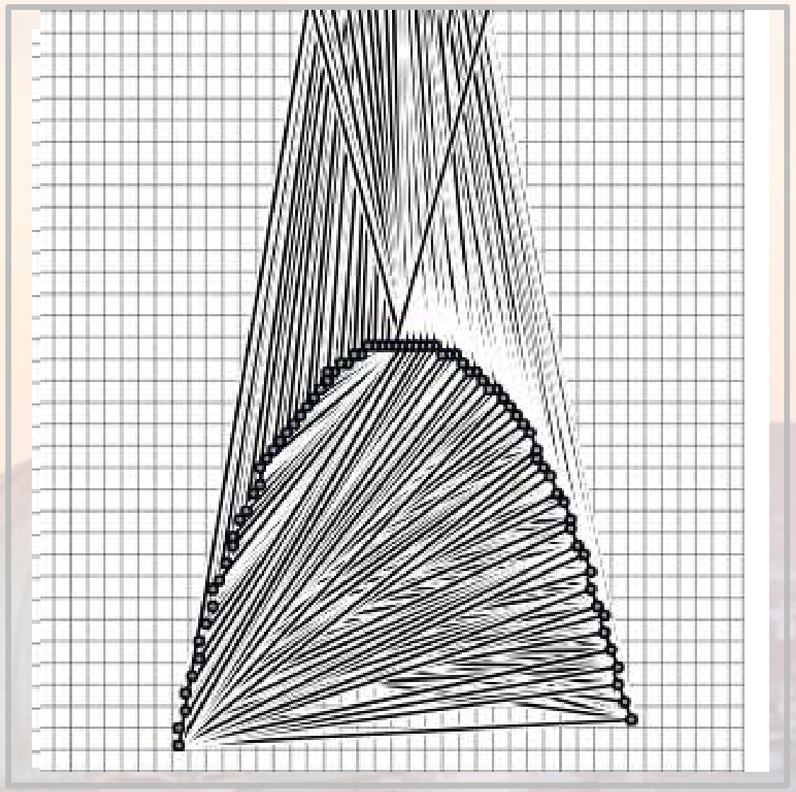
best automatic

graph **9**

LIVE CHALLENGE

The Graphs



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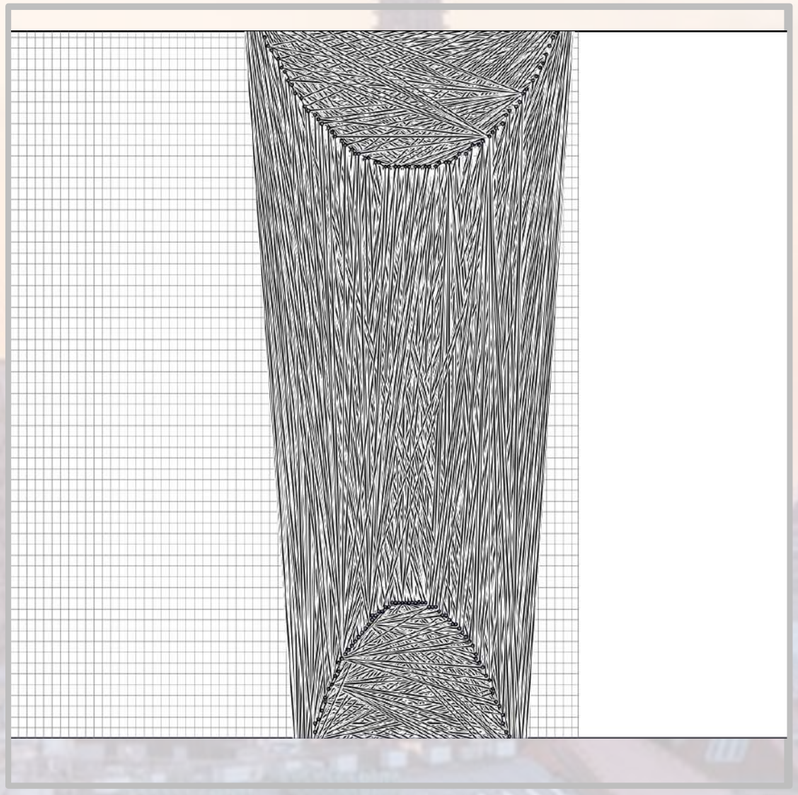
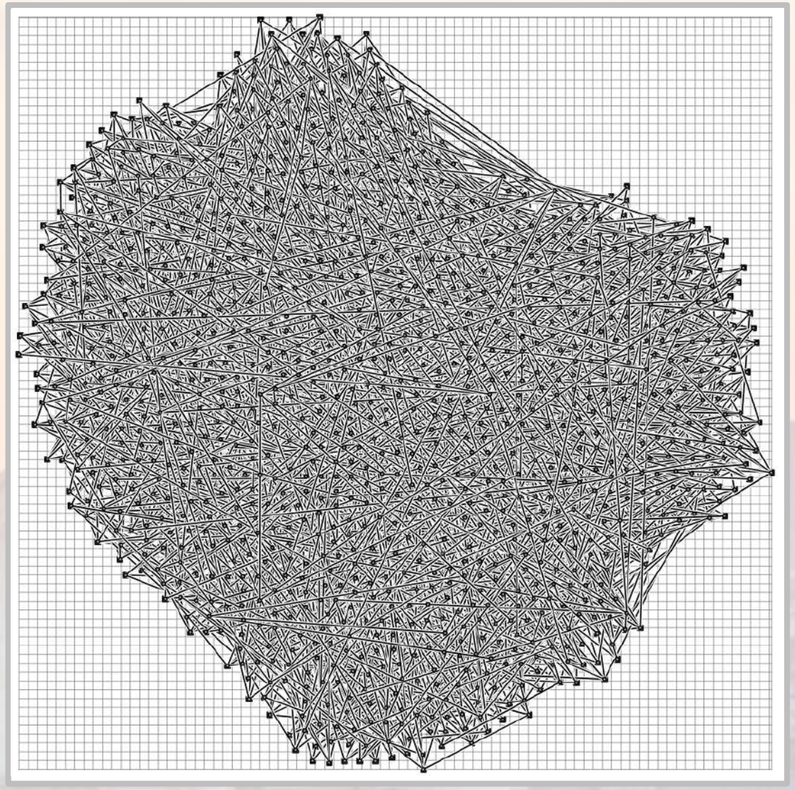
graph **9**



best automatic
Graph Gladiators
307724 crossings

LIVE CHALLENGE

The Graphs



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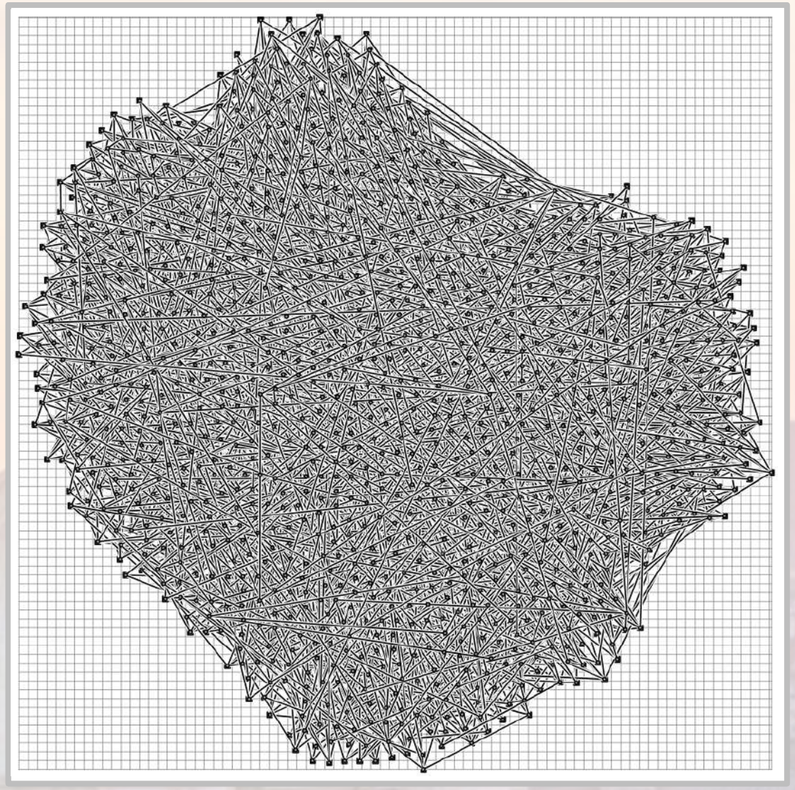
graph **10**

best automatic

LIVE CHALLENGE
The Graphs

gd 24



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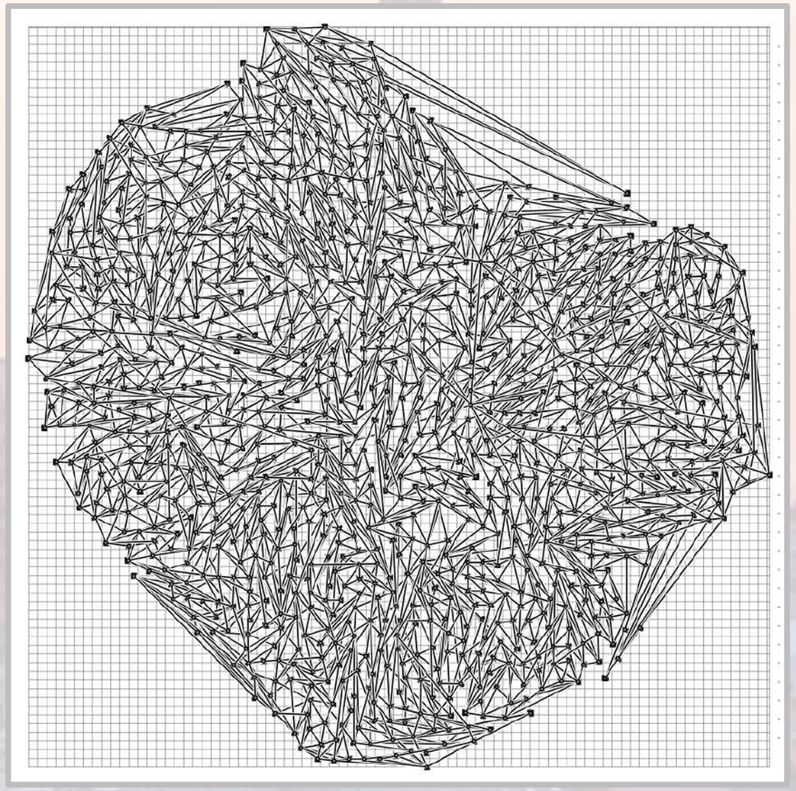
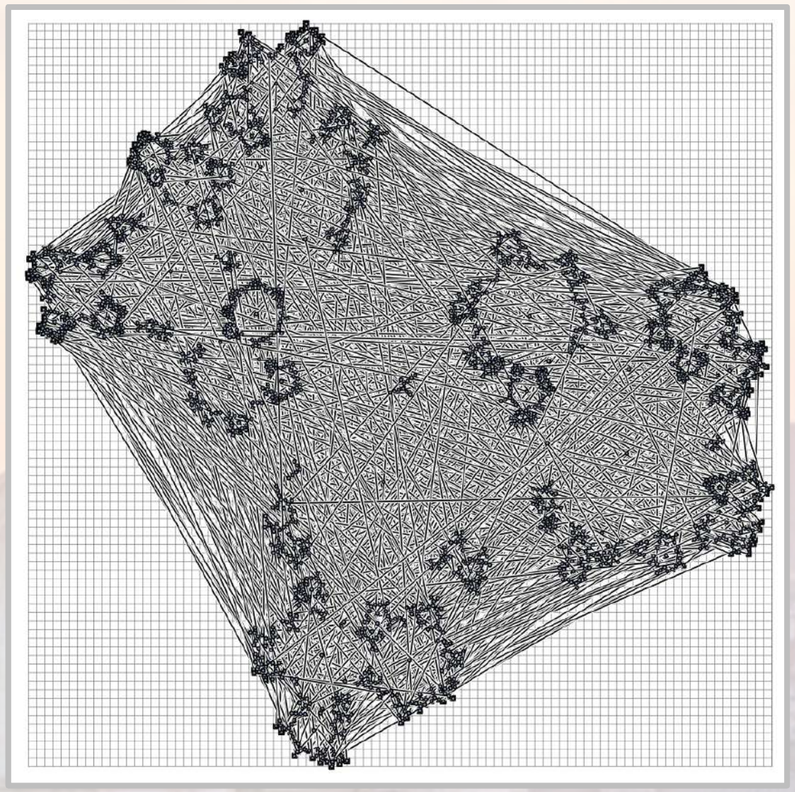
graph **10**



best automatic
OMeGA
3961 crossings

LIVE CHALLENGE

The Graphs



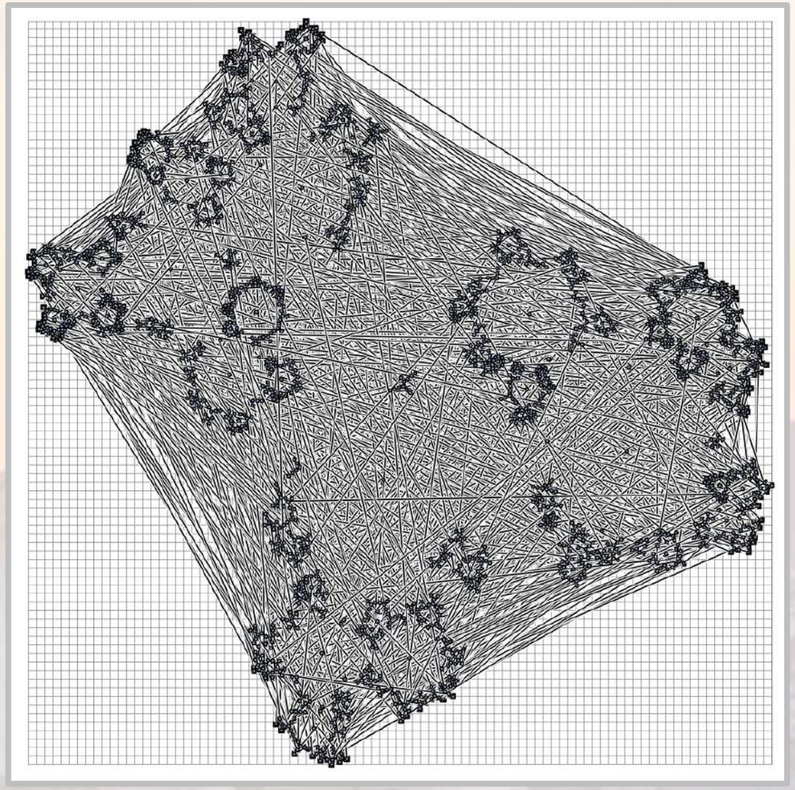
input

graph **11**

best automatic

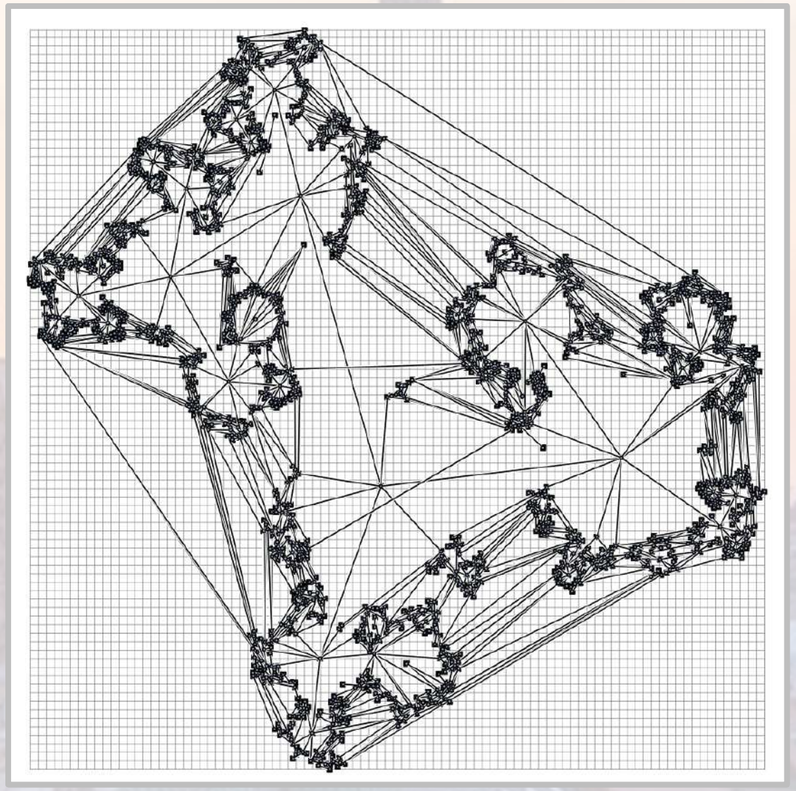
LIVE CHALLENGE

The Graphs



input

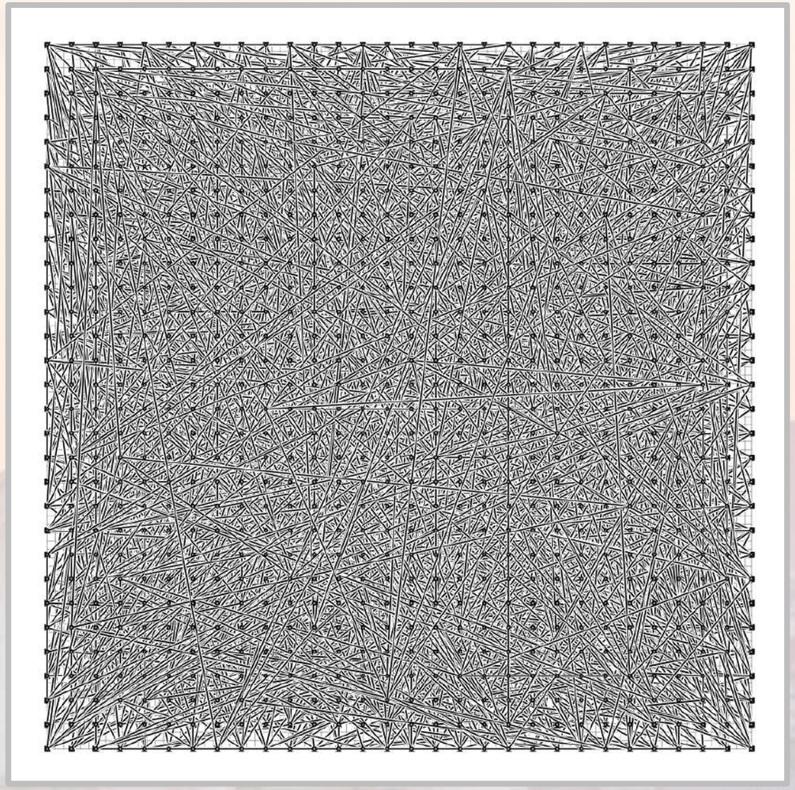
graph **11**



best automatic
OMeGA
4 crossings

LIVE CHALLENGE

The Graphs



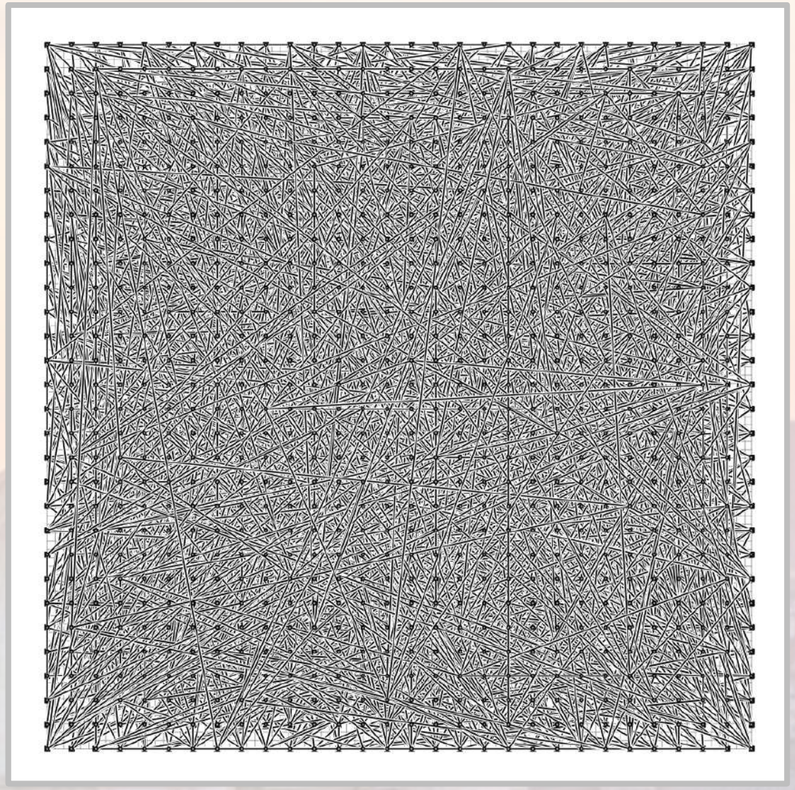
input

graph **12**

best automatic

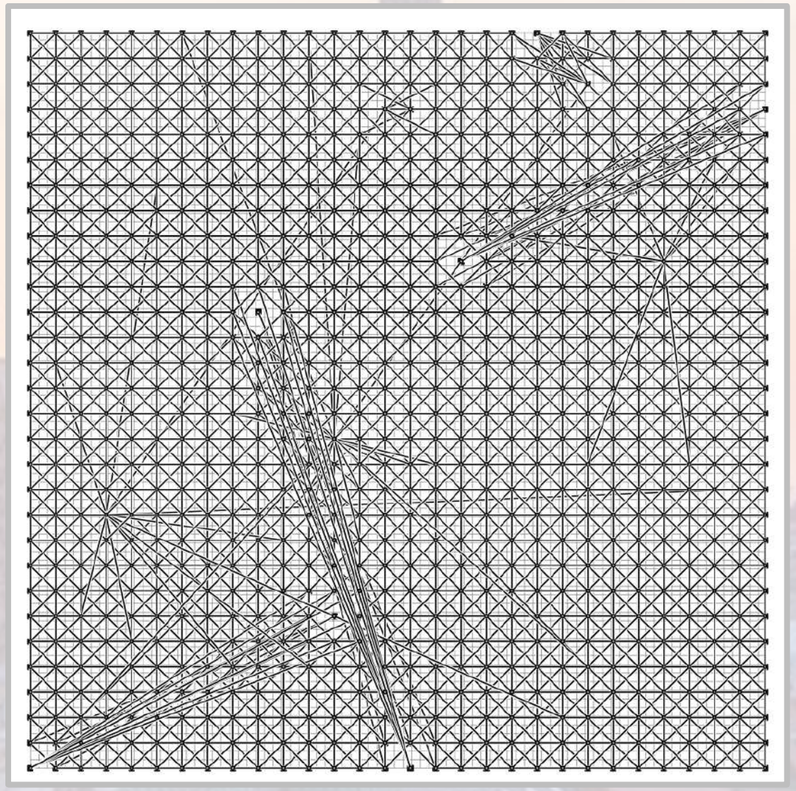
LIVE CHALLENGE

The Graphs



input

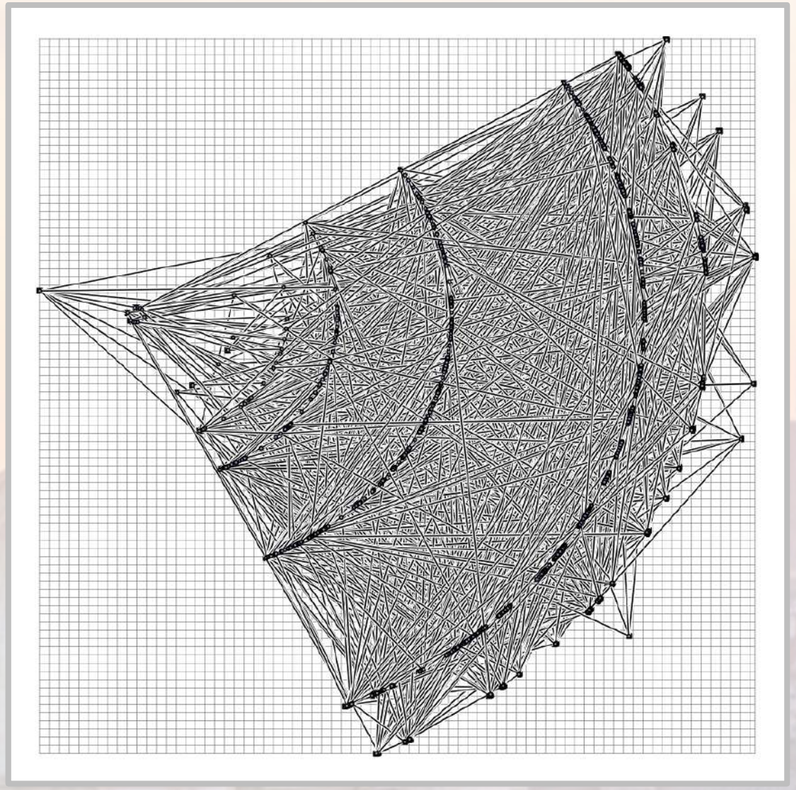
graph **12**



best automatic
OMeGA
65486 crossings

LIVE CHALLENGE

The Graphs



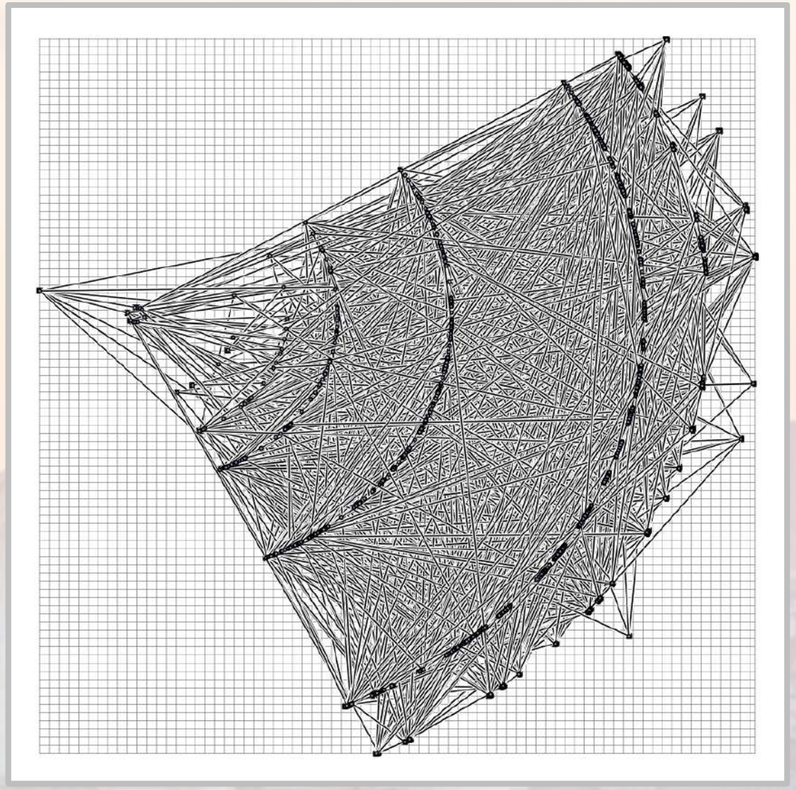
input

graph **13**

best automatic

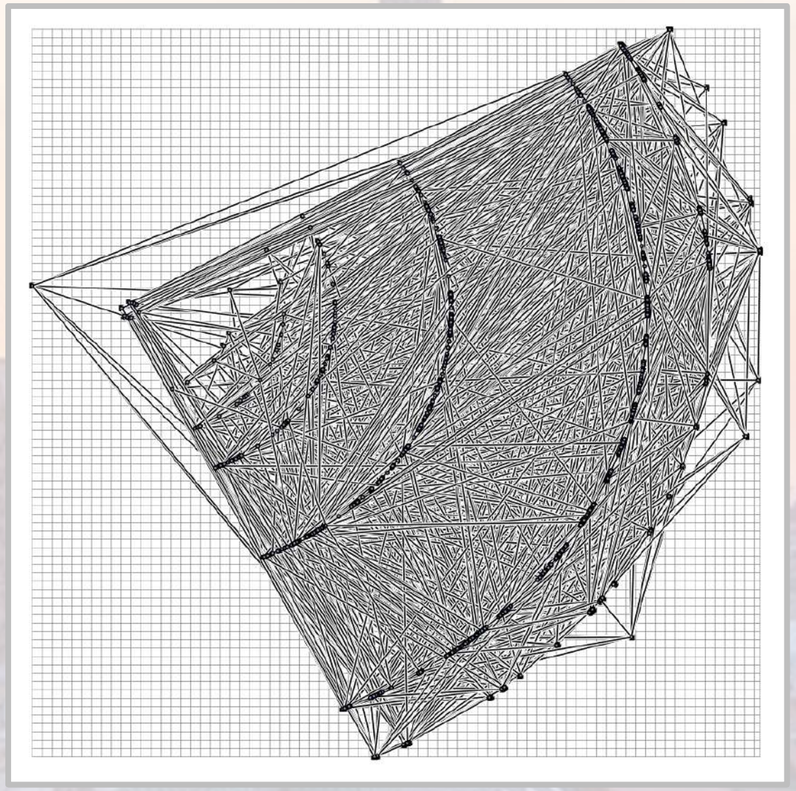
LIVE CHALLENGE

The Graphs



input

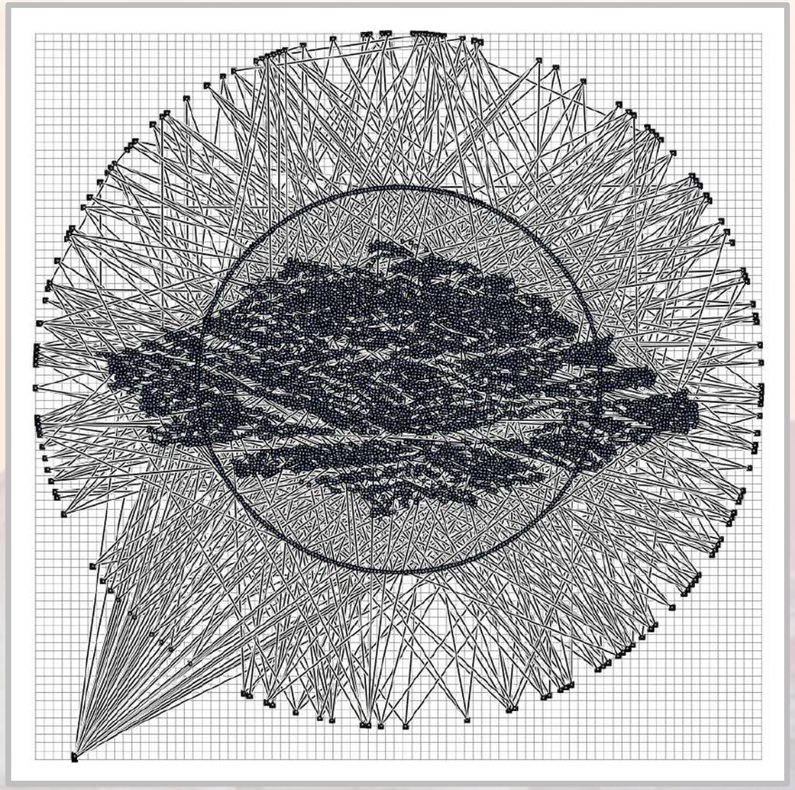
graph **13**



best automatic
Graph Gladiators
598224 crossings

LIVE CHALLENGE

The Graphs



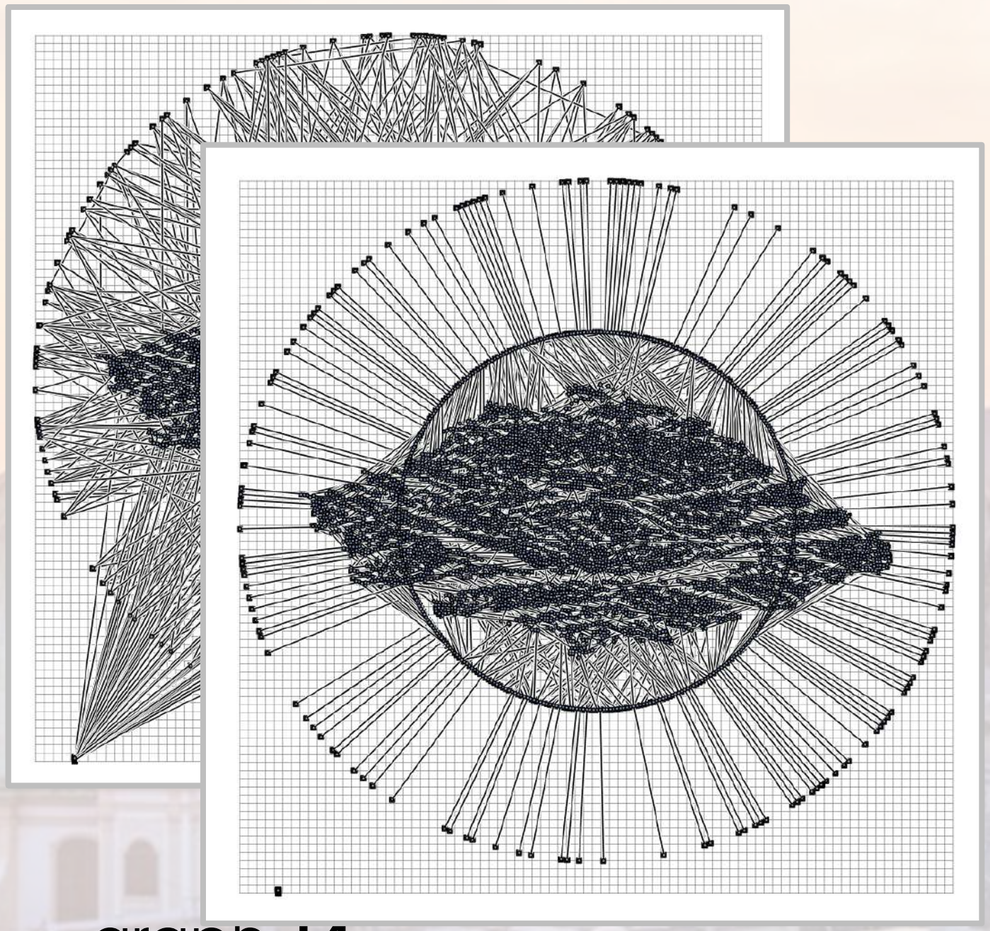
input

graph **14**

best automatic

LIVE CHALLENGE

The Graphs



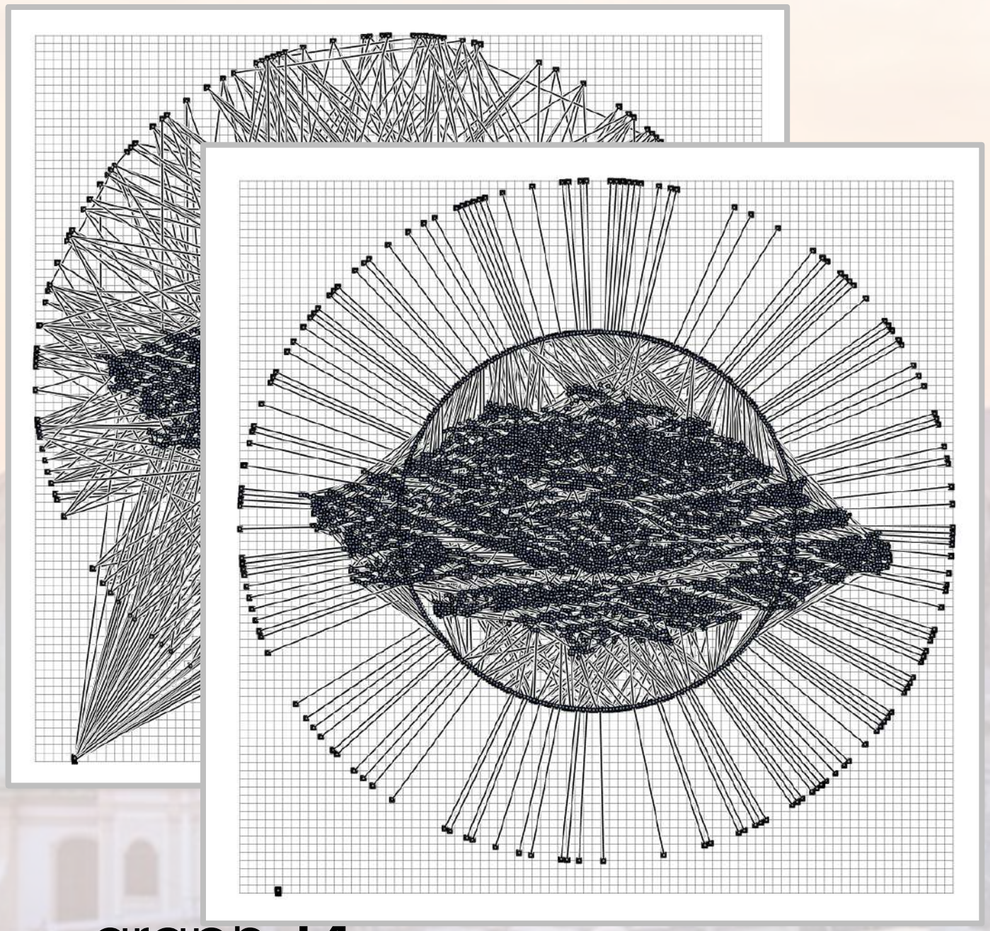
graph **14**

best automatic

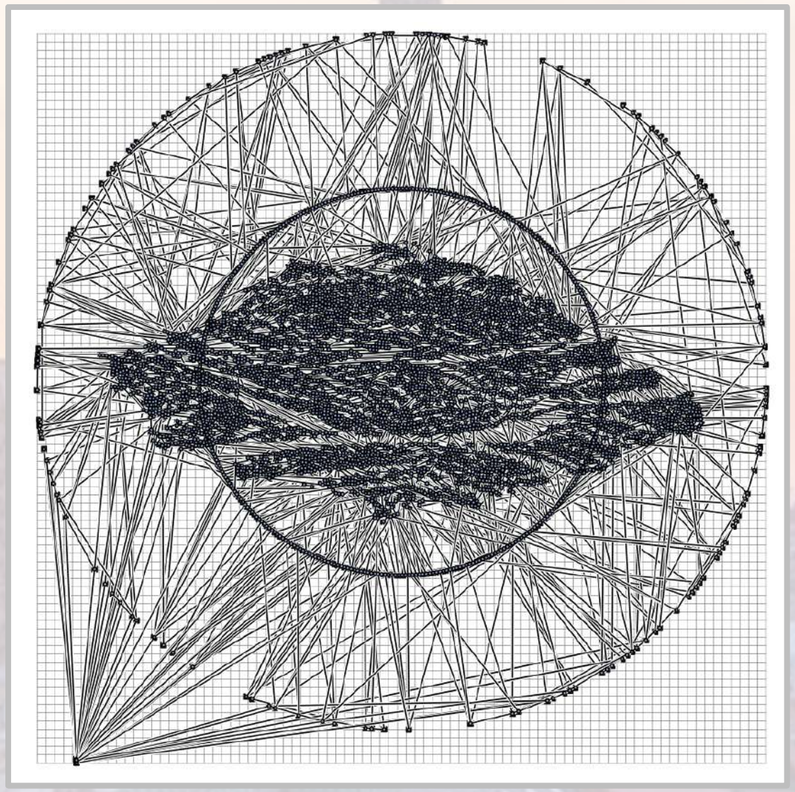
LIVE CHALLENGE

The Graphs

gd 24



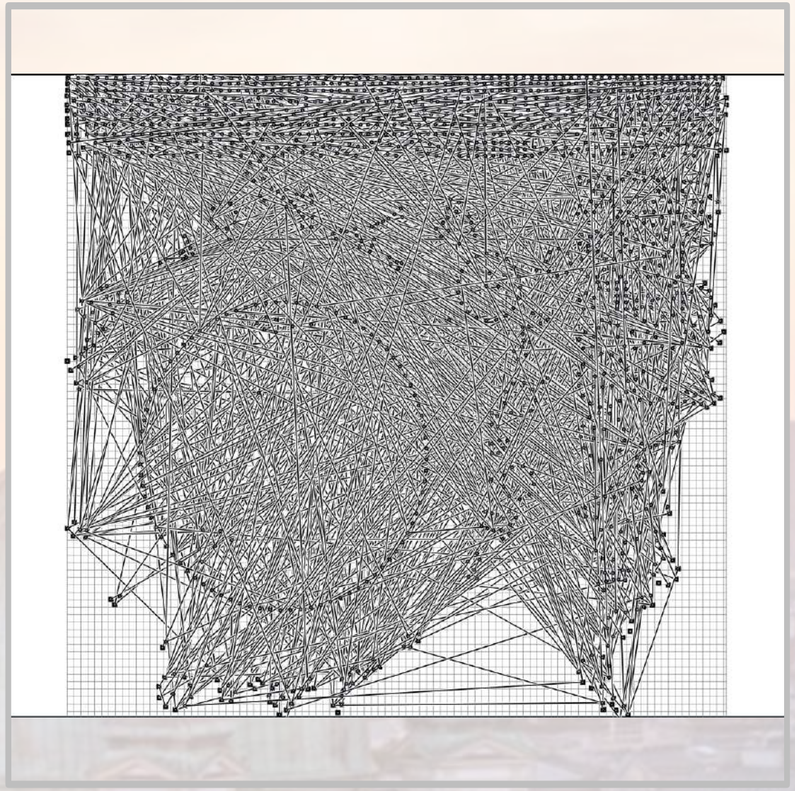
graph **14**



best automatic
OMeGA
65947 crossings

LIVE CHALLENGE

The Graphs



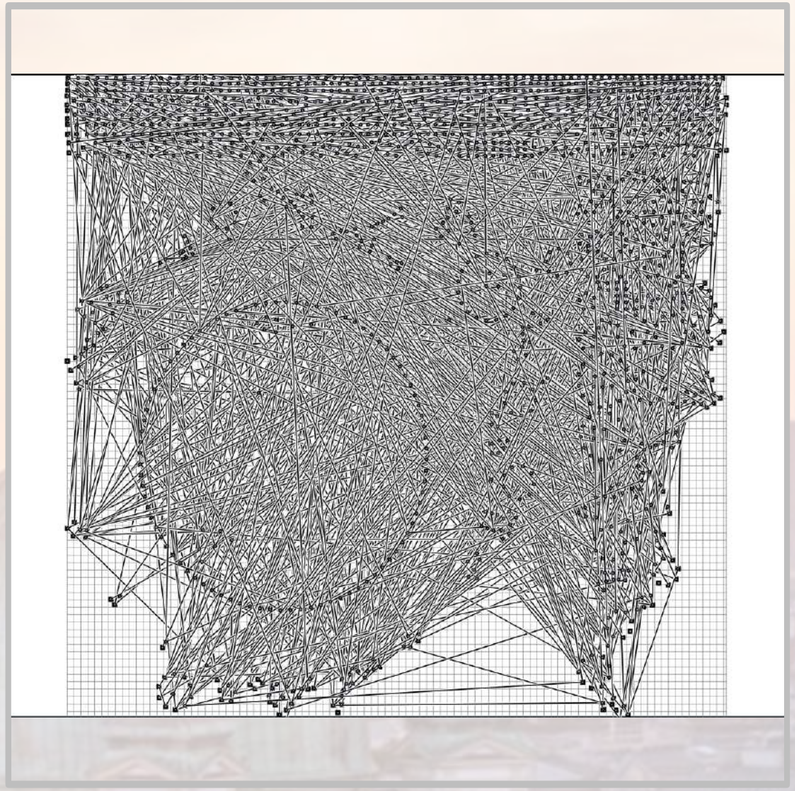
input

graph **15**

best automatic

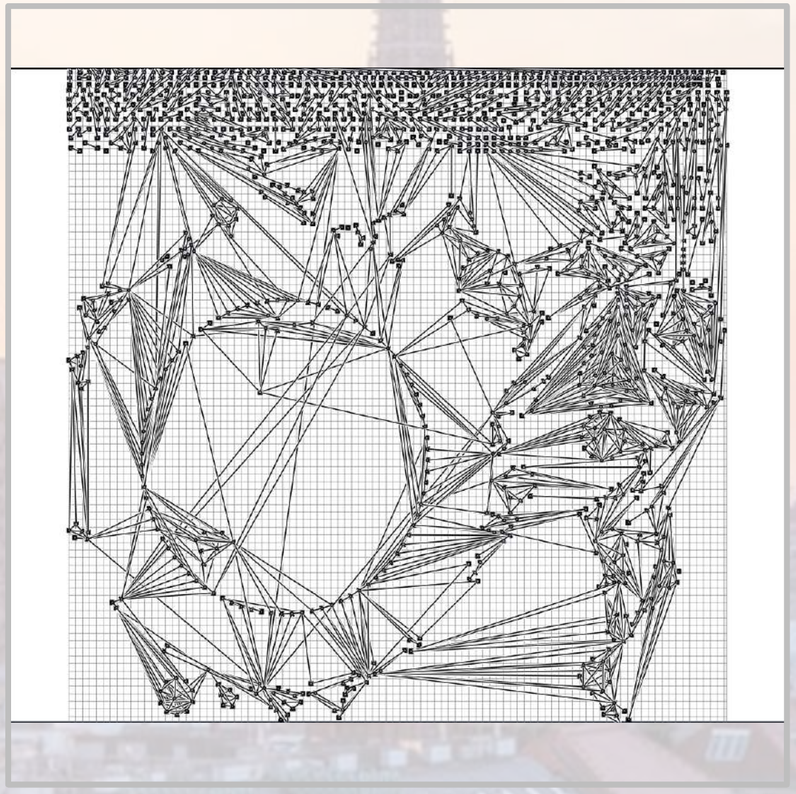
LIVE CHALLENGE

The Graphs



input

graph **15**



best automatic
OMeGA
3583 crossings

LIVE CHALLENGE

automatic category

LIVE CHALLENGE
automatic category

graph

Geometry

Rustlings

Graph Gladiators

Baseline

lrp

OptimizationGroup2

OMEGA

LIVE CHALLENGE
automatic category

graph	1
Geometry	11
Rustlings	11
Graph Gladiators	11
Baseline	11
lrp	11
OptimizationGroup2	11
OMEGA	11

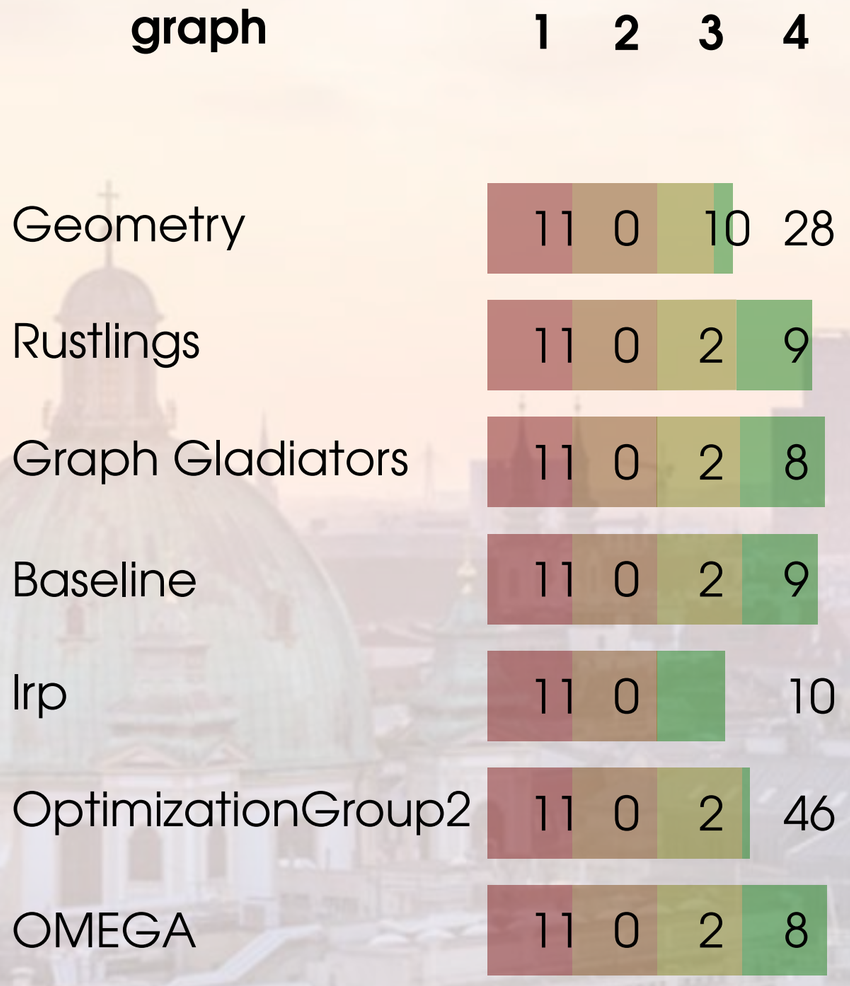
LIVE CHALLENGE
automatic category

graph	1	2
Geometry	11	0
Rustlings	11	0
Graph Gladiators	11	0
Baseline	11	0
lrp	11	0
OptimizationGroup2	11	0
OMEGA	11	0

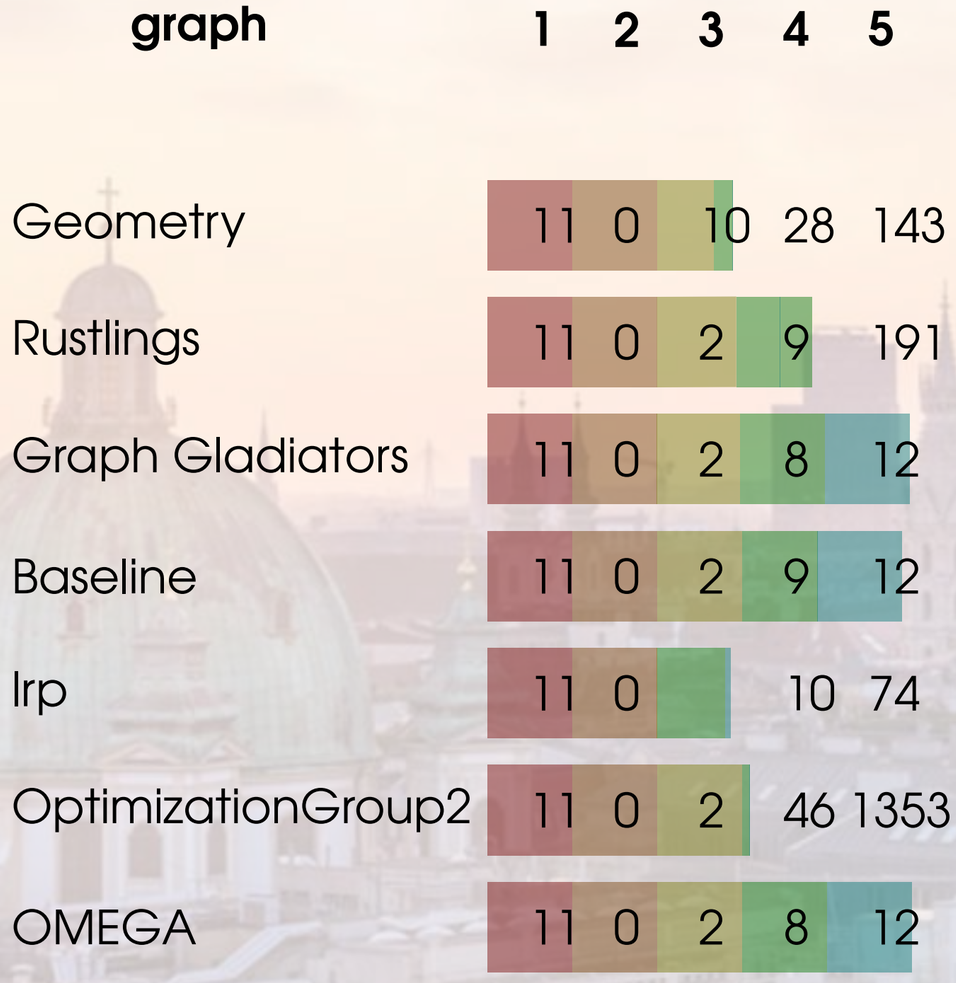
LIVE CHALLENGE
automatic category

graph	1	2	3
Geometry	11	0	10
Rustlings	11	0	2
Graph Gladiators	11	0	2
Baseline	11	0	2
lrp	11	0	
OptimizationGroup2	11	0	2
OMEGA	11	0	2

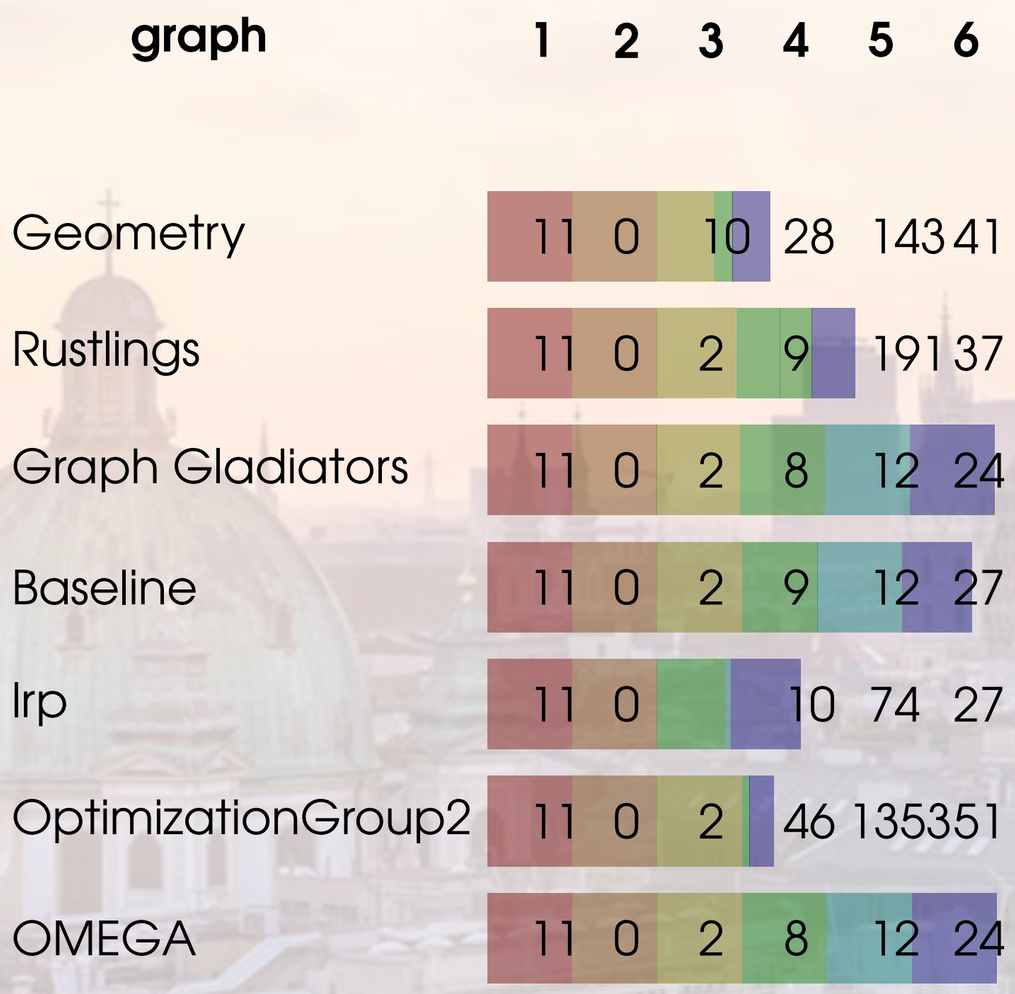
LIVE CHALLENGE
automatic category



LIVE CHALLENGE
automatic category



LIVE CHALLENGE
automatic category



LIVE CHALLENGE
automatic category

LIVE CHALLENGE
automatic category

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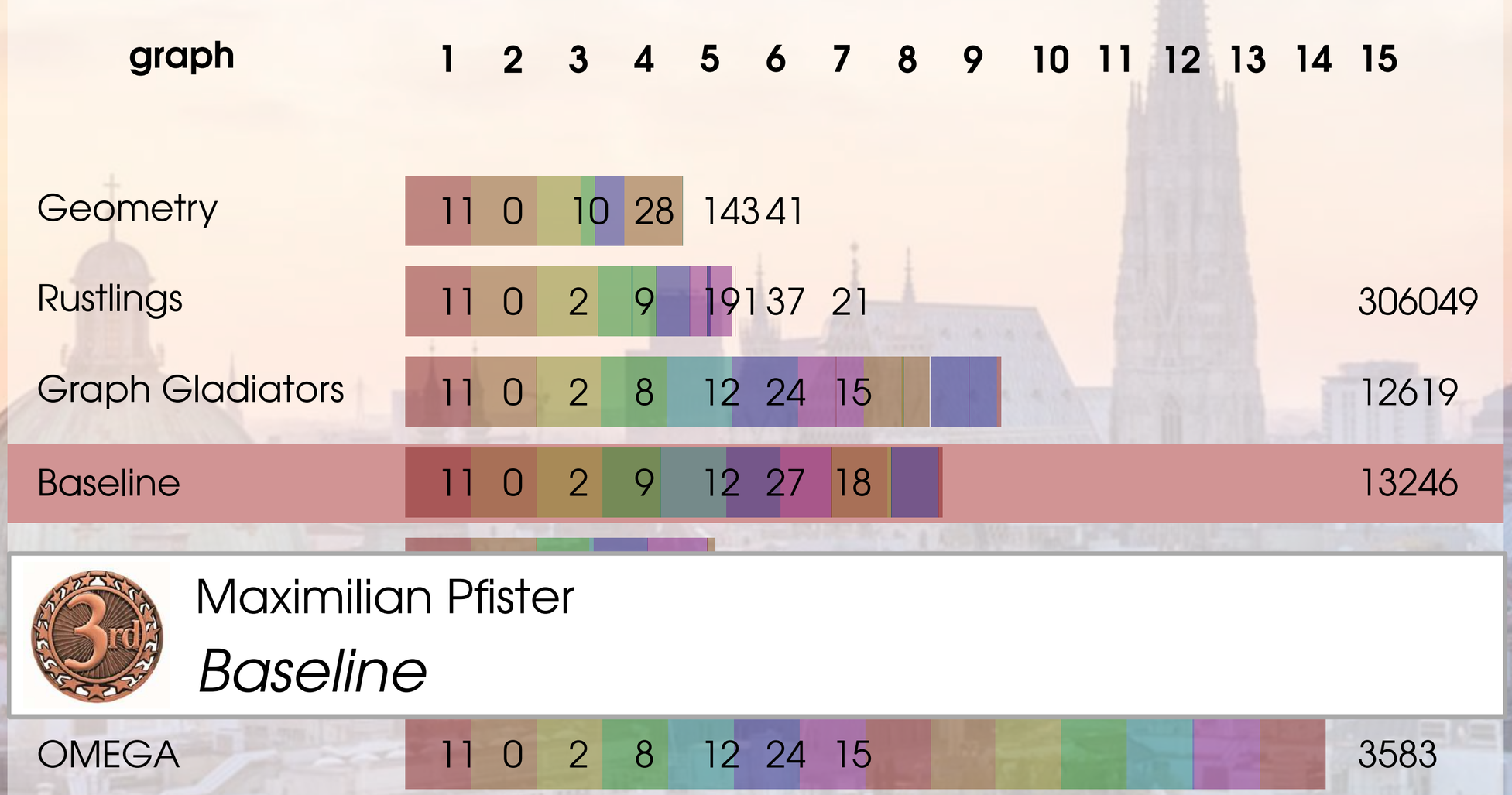
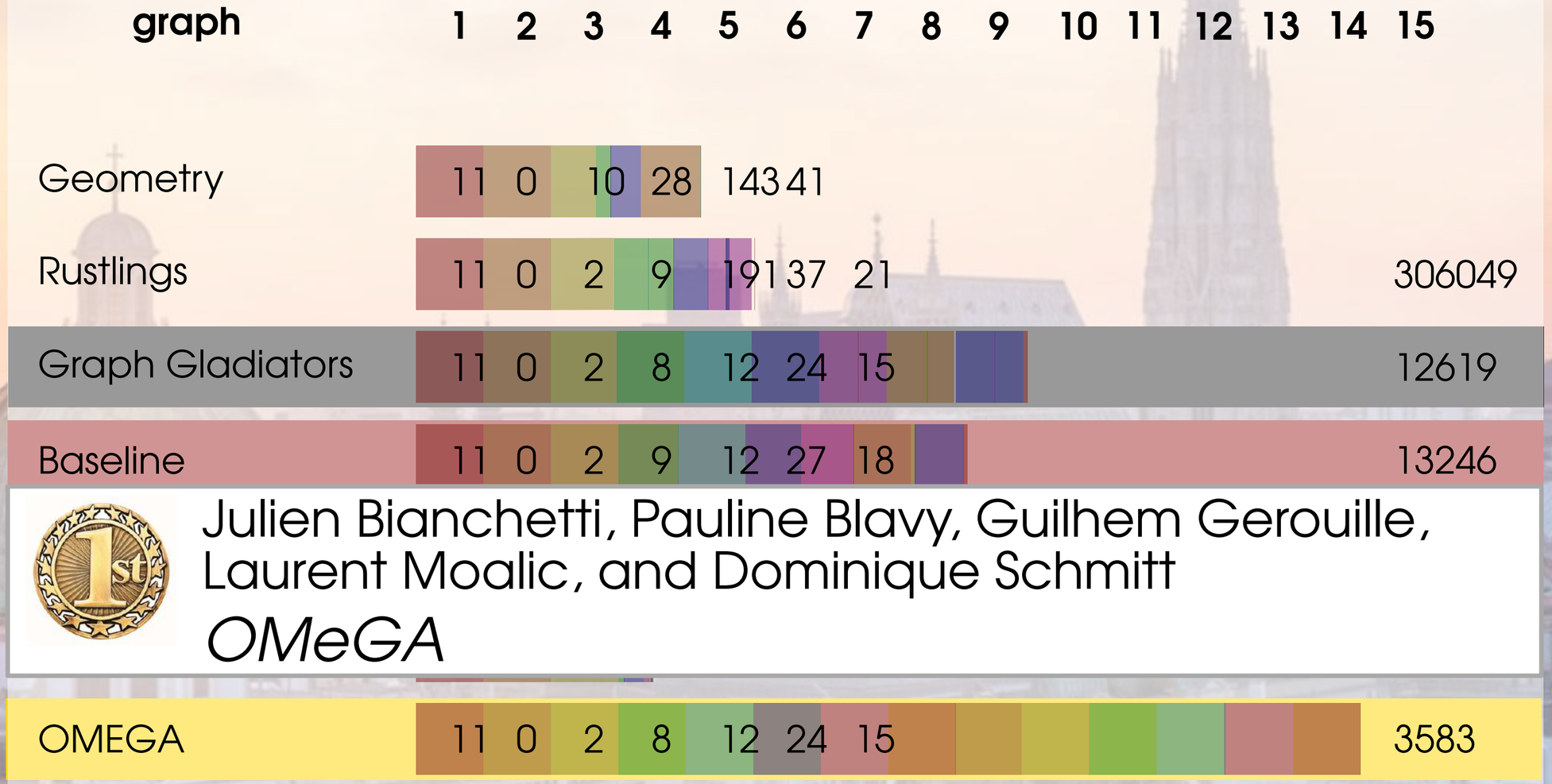


LIVE CHALLENGE
automatic category

Philipp Kindermann, Alexander Kutscheid, and Jan-Niclas Loosen
Graph Gladiators

graph	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Graph Gladiators	11	0	2	8	12	24	15								12619
Baseline	11	0	2	9	12	27	18								13246
lrp	11	0			10	74	27	16							
OptimizationGroup2	11	0	2		46	135351		80							2822936
OMEGA	11	0	2	8	12	24	15								3583

LIVE CHALLENGE
automatic category



GRAPH DRAWING CONTEST

2025 Announcement

gd 24

Announcement of Tasks

GRAPH DRAWING CONTEST

2025 Live Challenge

gd 24

GRAPH DRAWING CONTEST

2025 Live Challenge

gd 24

On the Relationship between k-Planar and k-Quasi Planar Graphs

Patrizio Angelini[1], Michael A. Bekos[1], Franz J. Brandenburg[2], Giordano Da Lozzo[3], Giuseppe Di Battista[4], Walter Didimo[5], Giuseppe Liotta[5], Fabrizio Montecchiani[5], and Ignaz Rutter[6]

GRAPH DRAWING CONTEST

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On the Relationship between k-Planar and k-Quasi Planar Graphs

Patrizio Angelini[1] Michael A. Bekos[1] Franz J. Brandenburg
Giordano
Giuseppe

Simple Topological Drawings of k-Planar Graphs

2-Layer k-Planar Graphs

Density, Crossing Lemma, Relationships, and Pathwidth

g Liu[1], Meghana M. Reddy[1(✉)],
D. Tóth[2,3]

Patrizio Angelini[1], Giordano Da Lozzo[2], Henry Förster[3(✉)],
and Thomas Schneck[3]

GRAPH DRAWING CONTEST

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gd 24

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Giordano
Giuseppe

2-Layer k-
Density, Crossing Lemma

Simple Topological Drawings of k-Planar

ly[1(✉)],

Chapter 7
***k*-Planar Graphs**

Michael A. Bekos

Dagstuhl Seminar 19092

Beyond-Planar Graphs: Combinatorics, Models and Algorithms

(Feb 24 – Mar 01, 2019)

(Click in the middle of the image to enlarge)

GRAPH DRAWING CONTEST

2025 Live Challenge

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On the Relationship between k-Planar and k-Quasi Planar Graphs

14:40 — 14:55 Julia Katheder, Philipp Kindermann, Fabian Klute, Irene Parada, and Ignaz Rutter. On k-Plane Insertion into Plane Drawings [S]

Patrizio Angelini · Michael A. Bekos · Franz
Giordano
Giuseppe

2-Layer k-
Density, Crossing Lemma

cal Drawings of k-Planar

r 19092

Beyond-Planar Graphs: Combinatorics, Models and Algorithms

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ly[1(✉)],

Chapter 7
k-Planar Graphs

Michael A. Bekos

(Click in the middle of the image to enlarge)

GRAPH DRAWING CONTEST

2025 Live Challenge

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Patrizio Angelini, Giordano Da Lozzo, Giuseppe Di Battista

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cal Drawings of k-Planar

r 19092

and Algorithms

ly[1(✉)],

Chapter 7
k-Planar Graphs

Michael A. Bekos

(Click in the middle of the image to enlarge)

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On the Relationship between k-Planar

Giordano
Giuseppe

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12:00 — 12:20 Oksana Firman, Grzegorz Gutowski, Myroslav Kryven, Yuto Okada, and Alexander Wolff. Bounding the Treewidth of Outer k-Planar Graphs via Triangulations [T1]

cal Drawings of k-Planar

and Algorithms

Michael A. Bekos

(Click in the middle of the image to enlarge)

GRAPH DRAWING CONTEST

2025 Live Challenge

On the Relationship between k-Planar and k-Quasi Planar Graphs

Patrizio A...
Giordano ...
Giuseppe ...

...cal Drawings of k-Planar ...

...r 19092

... and Algorithms

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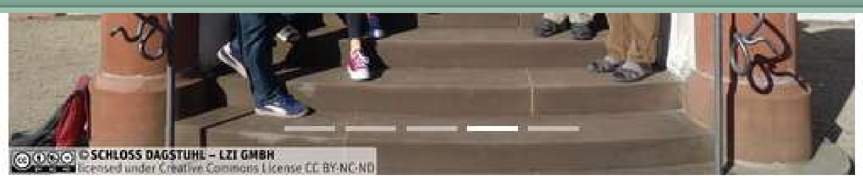
09:35 — 09:50	Petr Hliněný and Lili Ködmön. Note on Min-k-Planar Drawings of Graphs [S]

Cha...
k-Plan...

Michael A. Bekos



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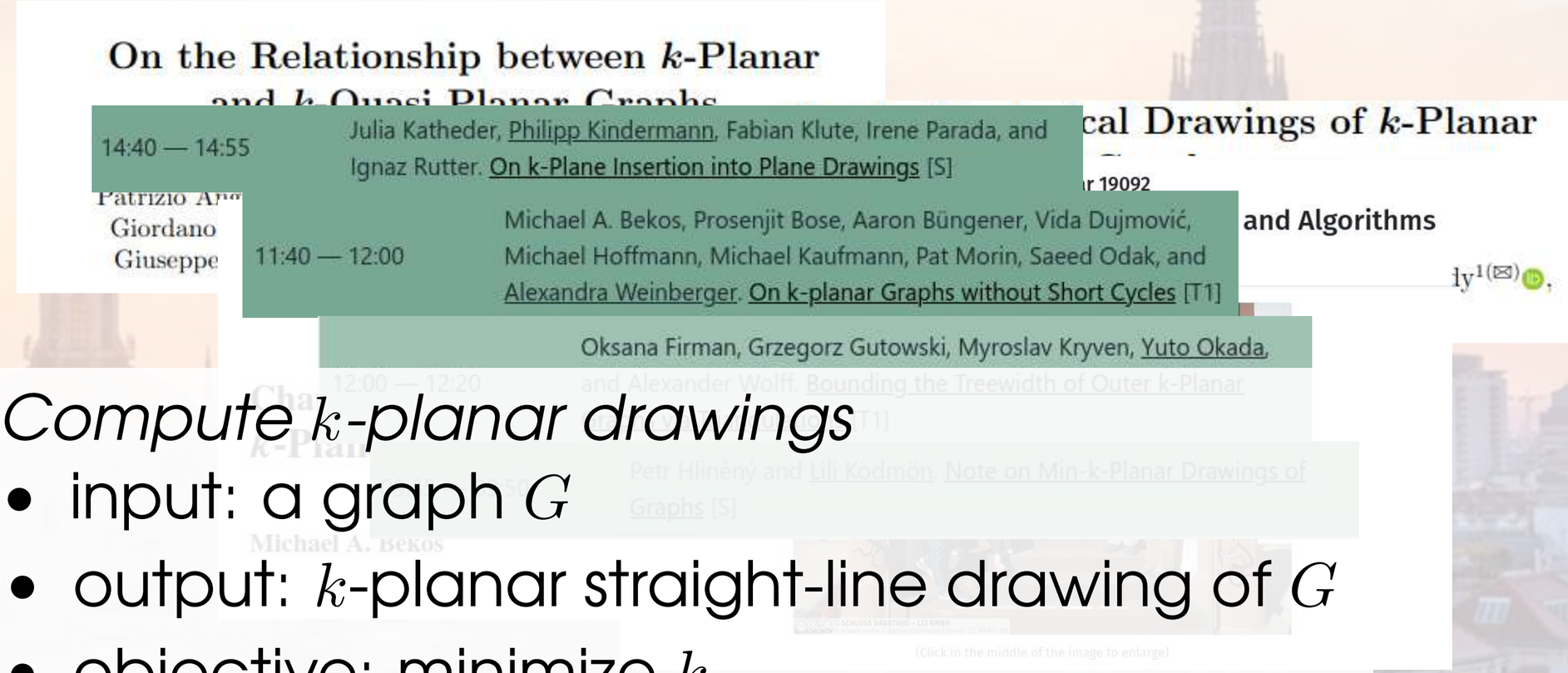

Compute k-planar drawings

- input: a graph G
- output: k-planar straight-line drawing of G
- objective: minimize k

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GRAPH DRAWING CONTEST

2024 Announcement

gd 24

Committee Announcement

GRAPH DRAWING CONTEST

2024 Announcement

gd 24

Wouter is leaving the committee

Thank you for all your work!

GRAPH DRAWING CONTEST

2025 Creative Topic

GRAPH DRAWING CONTEST

2025 Creative Topic

gd 24

Co-occurrence of characters in comic books

For decades, these comic book characters have created a deep and rich lore that goes way beyond the well know cartoons and movies.

GRAPH DRAWING CONTEST

2025 Creative Topic

gd 24

Co-occurrence of characters in comic books

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GRAPH DRAWING CONTEST

2025 Creative Topic

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Aku Ankan taskukirja

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Syrpa

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Kalle Ankas Pocket

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Kalle Ankas Pocket

Superkomiks

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Topolino

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Superkomiks

Topolino

Lustiges Taschenbuch

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2025 Creative Topic

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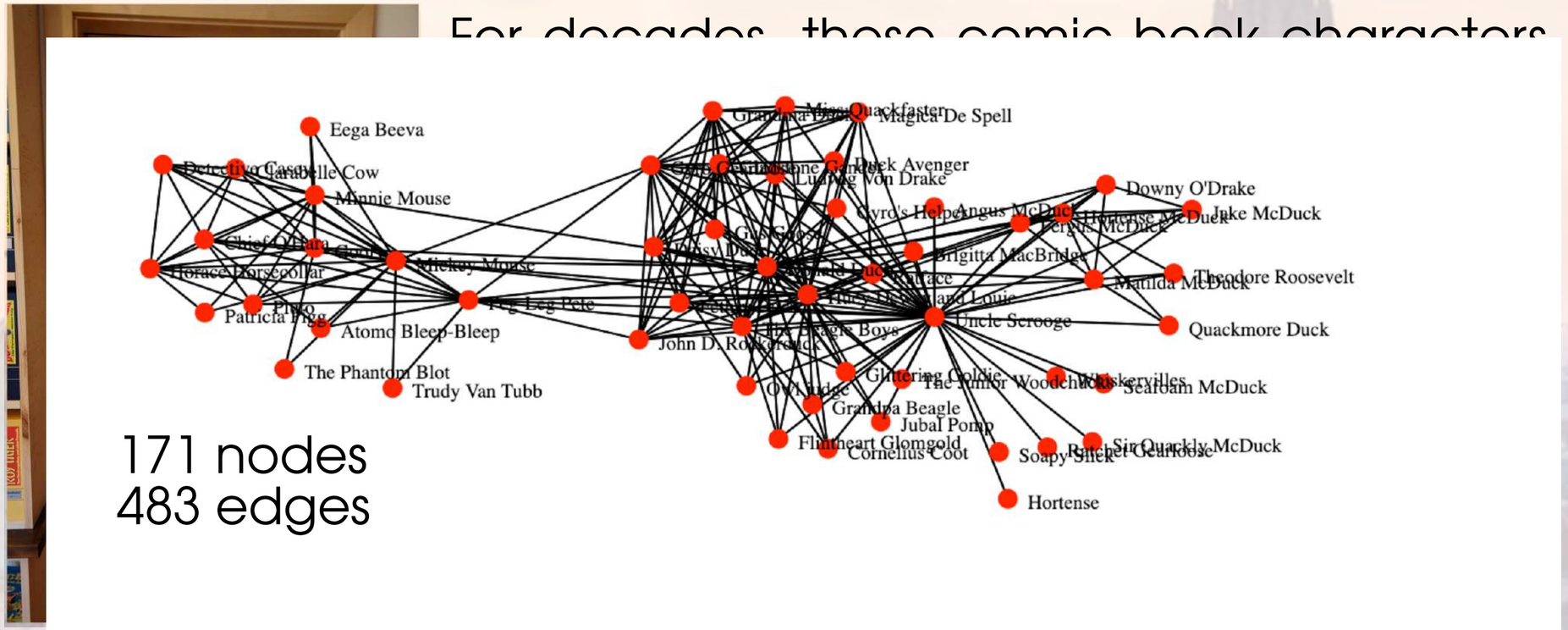
Co-occurrence of characters in Disney comic books



171 nodes
483 edges

Topolino

Lustiges Taschenbuch