WADS/CCCG 2025 Information & Program

August 11-15, 2025

York University, Toronto

Program

- **Talks:**
  - **Each talk is allocated 25 minutes**, which includes setup, presentation, and Q&A.
    Note for speakers: We recommend copying your presentation files (e.g., via USB or email) to the room computer before your session to ensure a smooth transition and avoid any delays. If you prefer to use your laptop, we will do our best to accommodate all systems.
    Volunteers will be available in each room to assist with setup and technical issues. We kindly request that all presenters to test their setup in advance.
  - We will hold an **Open Problem session at both WADS and CCCG**. If you have an open problem to share, please prepare a brief explanation—we would be very pleased to welcome you to present it.
  - Some colleagues are unable to attend the conferences due to visa issues. In such cases, they have provided a pre-recorded video of their talk, which will be played during their scheduled time slot, followed by a live Q&A session. In the conference program, **the remote talks are marked with a pink note.**
  - Unfortunately, **the WADS Best Paper session has been canceled** due to an accident involving the presenter.

- **Proceedings:**
  - WADS – The official proceedings have not yet been published; however, a preliminary version is now available and communicated via email and the printed program.
  - CCCG – To view individual papers, click on the provided links in the program to access the PDF files. The complete set of indexed papers can be found here: https://cccg-wads-2025.eecs.yorku.ca/cccg-all-papers.pdf

CCCG Preliminary Proceedings

- **Locations and Social Events:**
  - All talks will take place in the Accolade East Building (ACE) at York University's Keele Campus.
    Registration & Coffee Breaks – Ground floor of ACE.
    Talks – Lower level, rooms ACE 001, ACE 003, and ACE 005.
  - Reception (Tuesday evening) – Schulich Executive Dining Room, located across the street from the ACE building.
  - Banquet (Wednesday evening) – McMichael Canadian Art Collection. Buses will transport attendees from the conference venue to McMichael. See the program for banquet details.
  - Game Nights & Pizza (Monday and Thursday evening) – Hosted by volunteer students in the **Lassonde Building**, Room 3033 (York University EECS building).

- **Wi-Fi Access**

  - **Eduroam:** Preferred option for visitors from participating institutions. Log in using your home institution's username and password. This provides secure, high-speed internet access throughout campus.

  - **AirYorkGUEST:**
    Open network without a password. After connecting, open a browser and follow the on-screen instructions to register for guest access. Connection speed may be slower than eduroam. See here for info: https://www.yorku.ca/uit/student-services/internet-access/

AirYorkGUEST Wi-Fi access information

- **Accessing Athletic Center at York University**
  Attendees can use York's athletic facilities for $10/week. For instructions, please contact the registration desk (they will provide you with a hard copy of the instructions).

- **Lunch Options**
  There are several dining options near the conference venue, including:

  - **York Lanes Restaurants** [3 minutes from ACE]
    Recommended options include Cucina Italian Café, Sakura Japanese Foods, z-Teca Mexican Eatery, and La Prep. A full list of eateries is available at https://www.yorklanesmall.com/eateries.
  - **The Pond Road Restaurants** [5 minutes from ACE]
    Options include Omni Noodle, Sushi Q, and Meltwich.
  - **Keele Street Restaurants** [11 minutes from ACE]
    We recommended Bosphorus Turkish Restaurant. Other choices are Chung's Caribbean Restaurant and Bamiyan Kabob.
  - **The Orange Snail Pub & Coffee Shop at Stong College** [10 minutes from ACE]
    A Caribbean family restaurant on the York University campus.

  We have compiled a list of dining options (along with other locations of interest) on Google Maps. Please refer to the following link (or scan the QR code).
  https://tinyurl.com/mwhumfse

Restaurants (Google Maps)

- **Registration**

  - If you have not registered, please use the following link to register.

Registrartion link

- **Sponsors**

  - The Centre for Innovation in Computing at Lassonde (IC@L), York University
  - Research and Innovation, York University
  - Lassonde School of Engineering, York University
  - Department of Electrical Engineering and Computer Science (EECS), York University

LASSONDE SCHOOL OF ENGINEERING

YORK UNIVERSITÉ UNIVERSITY

DEPARTMENT OF ELECTRICAL ENGINEERING & COMPUTER SCIENCE

Monday, August 11

(WADS Day 1)

8:00 AM - 8:45 AM

Registration

ACE Ground Floor

8:45 AM - 9:00 AM

WADS Welcome and Opening Remarks

ACE 001

9:00 AM - 10:40 AM

WADS Session 1A

Parametrized Algorithms

chair: Pat Morin

ACE 001

- *Repairing Schedules by Removing Waiting Times: A Parameterized Complexity Analysis*
  Niels Grüttemeier and Klaus Heeger
- *The Parameterized Landscape of Labeled Graph Contractions*
  Manuel Lafond and Bertrand Marchand
- *Fantastic Flips and Where to Find Them: A General Framework for Parameterized Local Search on Partitioning Problems*
  Niels Grüttemeier, Nils Morawietz and Frank Sommer
- *Approximation and Parameterized Algorithms for Covering with Disks of Two Types of Radii*
  Sayan Bandyapadhyay and Eli Mitchell

WADS Session 1B

Geometry I: Coverage & Packing

chair: Michiel Smid

ACE 003

- *Convolution and Knapsack in Higher Dimensions*
  Kilian Grage, Klaus Jansen and Björn Schumacher
- *On geodesic disks enclosing many points*
  Prosenjit Bose, Guillermo Esteban, David Orden, Rodrigo Silveira and Tyler Tuttle.
- *Sweeping a Domain with Line-of-Sight Between Covisible Agents*
  Kien Huynh, Joseph Mitchell and Valentin Polishchuk
  (remote – Video talk + Q&A)
- *An Improved Guillotine Cut for Squares*
  Parinya Chalermsook, Axel Kugelmann, Ly Orgo, Sumedha Uniyal and Minoo Zarsav.

10:40 AM - 11:00 AM

Break

ACE Ground Floor

11:00 AM - 12:00 PM

WADS Invited Talk

chair: Ian Munro

ACE 001

Speaker: Dr. Prosenjit Bose, Carleton University

Title: Constructing and Routing on Geometric Spanners

Abstract: https://cccg-wads-2025.eecs.yorku.ca/WADS-Invited-Talk-1-Abstract.pdf

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12:00 PM - 2:00 PM

Lunch - on your own

WADS Session 2A

Streaming Algorithms

chair: Faith Ellen
ACE 001

WADS Session 2B

Graphs I: Distance & Routing

chair: David Mount
ACE 003

2:00 PM - 3:15 PM

- *Dynamic Streaming Algorithms for Geometric Independent Set*
  Timothy M. Chan and Yuancheng Yu
- *Parameterized Streaming Algorithms for Topological Sorting*
  Ho-Lin Chen, Peng-Ting Lin and Meng-Tsung Tsai
- *Streaming Algorithms for Conflict-free Coloring*
  Rogers Mathew, Fahad Panolan and Seshikanth Varma
  (remote – Video talk + Q&A)

- *Vantage Point Selection Algorithms for Bottleneck Capacity Estimation*
  Vikrant Ashvinkumar, Rezaul Chowdury, Jie Gao, Mayank Goswami, Joseph Mitchell and Valentin Polishchuk
- *Routing Few Robots in a Crowded Network*
  Argyrios Deligkas, Eduard Eiben, Robert Ganian, Iyad Kanj, Dominik Leko and Ramanujan M. Sridharan
- *Algorithms for Distance Problems in Continuous Graphs*
  Sergio Cabello, Delia Garijo, Antonia Kalb, Fabian Klute, Irene Parada and Rodrigo Silveira

WADS Best Paper Presentation

(in memory of Alejandro López-Ortiz)

Testing whether a subgraph is convex or isometric
Sergio Cabello
This talk has been cancelled due to an accident involving the presenter.

3:15 PM - 3:45 PM

Break
ACE Ground Floor

WADS Session 3A

Geometry II: Geometric Distance

chair: Eunjin Oh
ACE 001

WADS Session 3B

Data Structures

chair: Gill Barequet
ACE 003

3:45 PM - 5:00 PM

- *A near-linear time exact algorithm for the L_1-geodesic Fréchet distance between two curves on the boundary of a simple polygon*
  Thijs van der Horst, Marc van Krevel, Tim Ophelders and Bettina Speckmann
- *Link diameter, radius and 2-point link distance queries in polygonal domains*
  Mart Hagedoorn and Valentin Polishchuk
- *On the Complexity of Minimising the Moving Distance for Dispersing Objects*
  Nicolás Honorato-Droguett, Kazuhiro Kurita, Tesshu Hanaka and Hirotaka Ono

- *Fast Kd-trees for the Kullback–Leibler Divergence and other Decomposable Bregman Divergences*
  Tuyen Pham and Hubert Wagner
- *Grand-children weight-balanced binary search trees*
  Vincent Jugé
- *B-Treaps Revised: Write Efficient Randomized Block Search Trees with High Load*
  Roodabeh Safavi and Martin P. Seybold

WADS - Open Problem Session

5:00 PM - 6:00 PM

chair: Eunjin Oh
ACE 001

6:15 PM - 9:00 PM

Game Night & Pizza
Lassonde Building, Room 3033

Tuesday, August 12

(WADS Day 2)

8:30 AM - 9:15 AM

Registration

ACE Ground Floor

9:15 AM - 10:30 AM

WADS Session 4A

Graphs II: Structures and Testing

chair: Eunjin Oh
ACE 001

- *Succinct Data Structures for Chordal Graph with Bounded Leafage or Vertex Leafage*
  Meng He and Kaiyu Wu
- *Linear Layouts of Graphs with Priority Queues*
  Emilio Di Giacomo, Walter Didimo, Henry Förster, Torsten Ueckerdt and Johannes Zink
- *Scheduling on Identical Machines with Setup Time and Unknown Execution Time*
  Yasushi Kawase, Vinh Long Phan, Kazuhisa Makino and Hanna Sumita

WADS Session 4B

Geometry III: Crossing & Drawing

chair: Therese Biedl
ACE 003

- *On Planar Straight-Line Dominance Drawings*
  Patrizio Angelini, Michael Bekos, Giuseppe Di Battista, Fabrizio Frati, Luca Grilli and Giacomo Ortali
- *On Minimizing Wiggle in Stacked Area Charts*
  Alexander Dobler and Martin Nöllenburg
- *Crossing and Independent Families among Polygons*
  Anna Brötzner, Robert Ganian, Thekla Hamm, Fabian Klute and Irene Parada

10:30 AM - 11:00 AM

Break

ACE Ground Floor

11:00 AM - 12:00 PM

WADS Invited Talk

chair: Eunjin Oh
ACE 001

Speaker: Dr. Hsien-Chih Chang, Dartmouth College

Title: Unintuitive Facts about Distances on Planar Graphs

Abstract: Conventional wisdom told us that planar graphs are essentially edge-weighted grids, with more or less equal side-lengths. An n-node $n^{1/2} \times n^{1/2}$ square grid has treewidth $\Theta(n^{1/2})$; and if we want to preserve shortest-path distances between every pair of boundary nodes, intuitively we have to keep all the $n^{1/2}$ column and row paths, which together create n "crossings" that cannot be removed. This seems to suggest that planar graphs are incompressible and not tree-like. Or does it?

In this talk, we will discuss three unintuitive, and perhaps surprising, facts about planar metrics in the $(1+\varepsilon)$-approximation regime.

First, we demonstrate how to construct emulators for planar graphs that preserve all-pairs distances between k terminals, and have size $\widetilde{O}_\varepsilon(k)$. (This implies, for the grid example above, the resulting emulator has size $\widetilde{O}(n^{1/2})$.)

Second, planar metrics can be covered using constantly (!) many trees, in the sense that we can construct $O(1)$ trees independent of the input graph size that never shrink distances, so that given any pair of nodes x and y, there is one tree T that contains both x and y whose distance on T is stretched by at most a $(1+\varepsilon)$ factor. Along the way, we will introduce a novel structure on planar metrics — the gridtrees — that enables such tree covers, as well as its applications in the resolution to the Steiner point removal problem, and in constructing embeddings of planar graphs into polylog-treewidth graphs with $(1+\varepsilon)$-distortion. (Which means, if we are willing to distort the distance by a small amount, planar metrics are very much tree-like.)

Finally, we will discuss the issue of spanning. Both results above rely on the fact that the emulator and the tree cover use Steiner nodes, which are nodes not present in the original input graph. Maybe this is cheating, and the distance compression is only possible because of these nodes that appear out of nowhere? Our goal is to convince you otherwise: we can, in fact, construct emulators for planar graphs that are minors, which only use paths and edges from the input planar graph; and in the case of tree covers, we are one or two new structures away from enforcing the trees to be spanning, that is, the edges in the trees come from the input graph as well.

12:00 PM - 1:30 PM — Lunch - on your own

1:30 PM - 2:45 PM

WADS Session 5A
Counting & Enumeration
chair: Aaron Williams
ACE 001

- *Tight Bounds on the Number of Closest Pairs in Vertical Slabs*
  Ahmad Biniaz, Prosenjit Bose, Chaeyoon Chung, Jean-Lou De Carufel, John Iacono, Anil Maheshwari, Saeed Odak, Michiel Smid and Csaba Toth
- *On the enumeration of signatures of XOR-CNF's*
  Nadia Creignou, Oscar Defrain, Frédéric Olive and Simon Vilmin
- *Enumerating minimal dominating sets and variants in chordal bipartite graphs*
  Emanuel Castelo, Oscar Defrain and Guilherme Gomes

WADS Session 5B
Geometry IV: Noise and Motion
chair: Michael Goodrich
ACE 003

- *Computational Geometry with Probabilistically Noisy Primitive Operations*
  Vinesh Sridhar, Michael T. Goodrich and David Eppstein
- *Evolving Distributions Under Local Motion*
  Aditya Acharya and David Mount
- *Support Vector Machines in the Hilbert Geometry*
  Aditya Acharya, Auguste Gezalyan, Julian Vanecek and David Mount

2:45 PM - 3:15 PM — Break
ACE Ground Floor

3:15 PM - 4:30 PM

WADS Session 6A
Graphs III: Separators and Spanners
chair: Birgit Vogtenhuber
ACE 001

- *A WSPD, Separator and Small Tree Cover for c-packed Graphs*
  Lindsey Deryckere, Joachim Gudmundsson, Yuan Sha, Sampson Wong and André van Renssen
- *Novel Complexity Results for Temporal Separators with Deadlines*
  Riccardo Dondi and Manuel Lafond
- *Spanner for the $0/1/\infty$ weighted region problem*
  Joachim Gudmundsson, Zijin Huang, André van Renssen and Sampson Wong

WADS Session 6B
Dynamic Programming & Encoding
chair: David Eppstein
ACE 003

- *On the I/O Complexity of the Cocke-Younger-Kasami Algorithm and of a Family of Related Dynamic Programming Algorithms*
  Lorenzo De Stefani and Vedant Gupta
- *Quantum Speedups for Polynomial-Time Dynamic Programming Algorithms*
  Susanna Caroppo, Giordano Da Lozzo, Giuseppe Di Battista, Michael Goodrich and Martin Nöllenburg
- *Skipping Ropes: An Efficient Gray Code Algorithm for Generating Wiggly Permutations*
  Vincent Pilaud and Aaron Williams

4:30 PM - 5:00 PM — Break
ACE Ground Floor

5:00 PM - 6:00 PM — WADS Business Meeting
ACE 001

6:00 PM - 9:00 PM — WADS/CCCG Reception
Schulich Executive Dining Room

Wednesday, August 13

(WADS Day 3, CCCG Day 1)

8:00 AM - 8:45 AM — Registration
ACE Ground Floor

8:45 AM - 9:00 AM — CCCG Welcome and Opening Remarks
ACE 001

9:00 AM - 10:40 AM

WADS Session 7

Online and Scheduling Algorithms
chair: Zachary Friggstad
ACE 003

- *Lower bounds for several standard bin packing algorithms in the random order model*
  Leah Epstein and Asaf Levin
- *Online Routing in Directed Yao_4^{∞} Graphs*
  John Stuart, Prosenjit Bose and Jean-Lou De Carufel
- *An efficient polynomial time approximation scheme for minimizing the total weighted completion time on uniformly related machines*
  Leah Epstein and Asaf Levin

CCCG Session 1

Graph Embeddings & Layout Constraints
chair: Avery Miller
ACE 001

- *On Upward Book Embeddability of DAGs (pdf)*
  Rustem Kakimov, Xing Tan
- *Sweeping x-monotone pseudolines (pdf)*
  Therese Biedl, Erin Chambers, Irina Kostitsyna, Günter Rote
- *Straight-line Orthogonal Drawing of Complete Ternary Tree Requires $O(n^{1.032})$ Area (pdf)*
  Hong Duc Bui
- *On Upward Planar Embeddings of Paths with Partially Fixed Vertices (pdf)*
  Stephane Durocher, Myroslav Kryven, Tamara Mchedlidze

10:40 AM - 11:00 AM — Break
ACE Ground Floor

11:00 AM - 12:00 PM

WADS/CCCG Invited Talk: Pául Erdős Memorial Talk

chair: Shahin Kamali
ACE 001

Speaker: Dr. Piotr Indyk
CSAIL, MIT

Title: Towards overcoming the reranking bottleneck

Abstract: Reranking is a popular approach to information retrieval. It proceeds in two stages. In the first stage, a "quick-and-dirty" data structure retrieves a shortlist of r points closest to the query, where the length of the shortlist r is larger than the desired output k. In the second stage, the shortlist is post-processed to identify $k \ll r$ points that satisfy the desired objective. For example, the postprocessing could identify the k most "diverse" points in the shortlist or use a "slower-but-accurate" distance metric to identify the best answers. Despite its popularity, it has various drawbacks; notably the quality of the output is limited by the accuracy of the first stage.
In this talk, I will discuss an alternative to reranking, which fuses the two stages into a single search procedure. The new approach crucially uses recent developments in graph-based algorithms for high-dimensional similarity search, as well the tools developed to analyze such algorithms.

The PDF file of the abstract.

12:00 PM - 1:30 PM — Lunch - on your own

WADS Session 8

Approximation Algorithms

chair: Da Wei (David) Zheng

ACE 001

CCCG Session 2

Noise, Entropy, and Dynamics

chair: Denis Pankratov

ACE 005

1:30 PM - 2:45 PM

- *Approximation Algorithms for the Generalized Point-to-Point Problem*
  Zachary Friggstad, Mohammad Salavatipour and Hao Sun
- *A QPTAS for Facility Location on Unit Disk Graphs*
  Zachary Friggstad, Mohsen Rezapour, Mohammad Salavatipour and Hao Sun
- *Deterministic $(2/3 - \varepsilon)$-Approximation of Matroid Intersection Using Nearly-Linear Independence-Oracle Queries*
  Tatsuya Terao

- *Optimal Parallel Algorithms for Convex Hulls in 2D and 3D under Noisy Primitive Operations (pdf)*
  Michael T. Goodrich, Vinesh Sridhar
- *Entropy-Bounded Computational Geometry Made Easier and Sensitive to Sortedness (pdf)*
  David Eppstein, Michael T. Goodrich, Abraham M. Illickan, Claire A. To
- *PTAS for Stabbing Unit Squares and Variants (pdf)*
  Tanmay Inamdar, Sounak Modak, Kushal Singanporia
  (remote – Video talk + Q&A)

2:45 PM - 3:10 PM

Break

ACE Ground Floor

WADS Session 9

Clustering and Center Problems

chair: Rahnuma Islam Nishat

ACE 001

CCCG Session 3

Polygons, Polyhedra, and Polyominos

chair: Gill Barequet

ACE 005

3:10 PM - 4:50 PM

- *Clustering Point Sets Revisited*
  Md. Billal Hossain and Benjamin Raichel
- *Farthest-point Voronoi Diagrams in the Hilbert Metric*
  Minju Song, Mook Kwon Jung and Hee-Kap Ahn
- *On the Complexity of Finding 1-Center Spanning Trees*
  Pin-Hsian Lee, Meng-Tsung Tsai and Hung-Lung Wang

- *Inside-Out Dissections of Polygons and Polyhedra (pdf)*
  Reymond Akpanya, Adi Rivkin, Frederick Stock
- *Quasigeodesics on the Cube (pdf)*
  Hugo A. Akitaya, Erik D. Demaine, Adam Hesterberg, Thomas C. Hull, Anna Lubiw, Jayson Lynch, Klara Mundilova, Chie Nara, Joseph O'Rourke, Frederick Stock, Josef Tkadlec, Ryuhei Uehara
- *Decremental Greedy Polygons and Polyhedra Without Sharp Angles (pdf)*
  David Eppstein
- *On t-fold Totally-Concave Polyominoes (pdf)*
  Gill Barequet, Neal Madras, Johann Peters

WADS/CCCG Banquet

McMichael Canadian Art Collection

4:50 PM - 10:00 PM

- **5:00 PM** – Buses depart York University for McMichael
- **around 5:30 - 5:45 PM** – Arrive at McMichael (traffic-dependent)
- **around 5:30- 5:50** – Group photo
- **5:50 – 7:45 PM**– Gallery open for attendees
- **6:30 PM** – Bar opens
- **7:30 PM**– Dinner served
- **9:30 PM**– Bar closes
- **9:45 PM** – Buses depart McMichael for return to Toronto (with a stop at Vaughan area)

Thursday, August 14

(CCCG Day 2)

8:30 AM - 9:00 AM — Registration, ACE Ground Floor

9:00 AM - 10:40 AM

CCCG Session 4A

Visibility and Guarding
chair: Therese Biedl
ACE 001

- *Guarding Polygons With Mutually Visible π-Guards (pdf)*
  Arash Ahadi, Ahmad Biniaz, Mohammad Hashemi, Ali Nakhaeisharif
- *Multiple Watchman Routes in Staircase Polygons (pdf)*
  Anna Brötzner, Bengt J. Nilsson, Christiane Schmidt
- *On Super-Guarding Convex and Star-Shaped Polygons (pdf)*
  Gabriel Aldous, Seth Barber, Alper Üngör
- *The VC-Dimension of Limited Visibility on the Boundary of a Simple Polygon (pdf)*
  Matt Gibson-Lopez, Erik Krohn,Zhongxiu Yang

CCCG Session 4B

Transformations and Metric Extensions
chair: Neal Madras
ACE 003

- *The Number of Non-overlapping Unfoldings in Convex Polyhedra (pdf)*
  Takumi Shiota, Yudai Enomoto, Masashi Gorobe, Takashi Horiyama, Tonan Kamata, Toshiki Saitoh, Ryuhei Uehara
- *On the Diameters of Reconfiguration Graphs and ZDD-Based BFS-Algorithm for Optimal Reconfiguration Problems of Optimal Ladder Lotteries (pdf)*
  Shoon Mineyoshi, Kazuhisa Seto, Takashi Horiyama
- *Fast Approximate Lipschitz Extensions in Doubling Metrics (pdf)*
  Donald Sheehy
- *Hausdorff Edit Distance (pdf)*
  Jonathan Perry, Benjamin Raichel

10:40 AM - 11:00 AM — Break, ACE Ground Floor

11:00 AM - 12:00 PM

CCCG Invited Talk: Godfried Toussaint Memorial Talk

chair: Ian Munro
ACE 001

Speaker: Dr. David Mount
Dept. of Computer Science and Institute for Advanced Computer Studies
University of Maryland

Title: Computational Geometry from a Non-Euclidean Perspective

Abstract: The field of discrete and computational geometry has been immensely successful in enhancing the understanding of efficient algorithms and data structure for problems that involve geometric inputs. The vast majority of work in this field has focused on Euclidean geometry and its close relatives in normed spaces, such as L_1 and L_∞. Recently, there has been growing interest in non-Euclidean geometries, including hyperbolic geometry, Hilbert geometry, and alternative notions of distance, such as Bregman divergences. In this talk, we will explore the reasons behind the increased interest in these geometries, survey recent developments, and demystify the somewhat arcane mathematics that underlies these systems. Finally, we will present many open problems that are inspired by this non-Euclidean viewpoint.

The PDF file of the abstract.

12:00 PM - 1:30 PM — Lunch - on your own

CCCG Best PhD Dissertation Presentation

chair: David Eppstein
ACE 001

1:30 PM - 2:00 PM

Thesis: From Geometry to Graphs and Back: Geometric Range Searching and Algorithms in Structured Graphs
Speaker: Da Wei (David) Zheng, UIUC
Abstrac:
This thesis is split into two parts. The first part is on geometric data structures related to range searching with ranges whose boundaries consist of lines, line segments, or can be described by algebraic equations. These data structures are fundamental components of geometric algorithms such as for nearest neighbors, Euclidean minimum spanning tree, and computing Voronoi diagrams.
The second part of the thesis is focused on developing algorithms for problems like computing the diameter for structured classes of graphs such as planar graphs, minor-free graphs, and geometric intersection graphs. The algorithms involve techniques including: low dimensional decomposition of graphs, VC-dimension, and geometric range searching data structures.

2:00 PM - 3:40 PM

CCCG Session 5A

Tree and Center Problems
chair: Michiel Smid
ACE 001

- *Minimum Anchored Steiner Trees with Removable Obstacles (pdf)*
  Stephane Durocher, Arman Heydari, J. Mark Keil, Debajyoti Mondal
- *Approximate and Exact Geometric Generalized Minimum Spanning Trees (pdf)*
  Majid Mirzanezhad, Arash Rafiey
- *Fault-Tolerant Euclidean k-Centres (pdf)*
  Stephane Durocher, Sahar Lamey, Pak Ching Li
- *The Orthogonal Two-Line Center Problem (pdf)*
  Taehoon Ahn, Sang Won Bae, Sang Duk Yoon

CCCG Session 5B

Puzzles & Complexity
chair: Rahnuma Islam Nishat
ACE 003

- *Covert Computation in the Prebuilt aTAM (pdf)*
  Timothy Gomez, Robert Schweller, Tim Wylie
- *Partitioning Colored Points into Monochromatic Islands is NP-Complete (pdf)*
  Steven van den Broek, Marc van Kreveld, Soeren Terziadis
- *Puzzles are hard enough just by rotations (pdf)*
  Takeshi Yamada, Tom van der Zanden, Ryuhei Uehara
- *Input-Sensitive Reconfiguration of Sliding Cubes (pdf)*
  Hugo A. Akitaya, Matias Korman, Frederick Stock

3:40 PM - 4:00 PM

Break
ACE Ground Floor

4:00 PM - 5:00 PM

CCCG Open Problem Session

chair: Joseph O'Rourke
ACE 001

5:00 PM - 6:00 PM

CCCG Business Meeting

ACE 001

6:15 PM - 9:00 PM

Game Night & Pizza
Lassonde Building, Room 3033

Friday, August 15

(CCCG Day 3)

8:30 AM - 9:00 AM

Registration

ACE Ground Floor

9:00 AM - 10:40 AM

CCCG Session 6A

Probing Geometry & Query Optimization

chair: Aditya Potukuchi

ACE 001

- *Approximating Metric Depth Queries (pdf)*
  Shuhao Tan, David Mount
- *Reconstructing Bounded Treelength Graphs with Linearithmic Shortest Path Distance Queries (pdf)*
  Chirag Kaudan, Amir Nayyeri
- *The Marco Polo Problem: A Combinatorial Approach to Geometric Localization (pdf)*
  Ofek Gila, Michael Goodrich, Zahra Hadizadeh, Daniel Hirschberg, Shayan Taherijam
- *The Rectilinear Marco Polo Problem (pdf)*
  Ofek Gila, Michael Goodrich, Zahra Hadizadeh, Daniel Hirschberg, Shayan Taherijam

CCCG Session 6B

Graphs and Approximation

chair: Myroslav Kryven

ACE 003

- *Approximating 2-Clique in Unit Disk Graphs (pdf)*
  Karim Abu Affash, Paz Carmi, Iliya Lisin
- *Computing Maximum Cliques in Unit Disk Graphs (pdf)*
  Anastasiia Tkachenko, Haitao Wang
- *Approximation and Hardness of Polychromatic TSP (pdf)*
  Thomas Schibler, Subhash Suri, Jie Xue
- *Minimum Selective Subset on Some Graph Classes (pdf)*
  Bubai Manna
  (remote – Video talk + Q&A)

10:40 AM - 11:00 AM

Break

ACE Ground Floor

11:00 AM - 12:00 PM

CCCG Invited Talk: Ferran Hurtado Memorial Talk

chair: Stephane Durocher

ACE 001

Speaker: Dr. Birgit Vogtenhuber
Graz University of Technology

Title: Combinatorial Reconfiguration: Flipping Non-Crossing Spanning Trees

Abstract: Flipping edges in non-crossing geometric graphs has been one of the core research topics of Ferran Hurtado, which is witnessed by the fact that he chose this topic for his invited talk at CCCG 2003. In this talk, I will report on flips in non-crossing spanning trees.

For a set P of n points in the plane, a non-crossing (geometric) spanning tree is a spanning tree of the points in which every edge is a straight-line segment between a pair of points and no two edges intersect except at a common endpoint. In its most general form, an *edge flip* in a non-crossing spanning tree T of P is the operation of removing one edge from T and adding another edge such that the resulting structure is again a non-crossing spanning tree of P. Besides this edge flip, several more restricted flip operations have been considered for spanning trees. Most notably these include *compatible edge flips* (where the exchanged edges are non-crossing), *rotations* (where the exchanged edges share an endpoint), and *edge slides* (where the exchanged edges together with some third edge form an uncrossed triangle). The problem of transforming one non-crossing spanning tree into another one via a sequence of flip operations of some type has been widely studied. As already reported by Ferran in 2003, such a transformation is always possible with a finite number of flips even for the case of edge slides, which is the most restricted of the flip operations. We will review recent results concerning bounds on the number of flips that are sometimes required and always sufficient. We will close with possible properties of shortest flip sequences, the algorithmic question of finding such sequences, and some open problems.

12:00 PM - 1:30 PM — Lunch - on your own

1:30 PM - 3:10 PM

CCCG Session 7A

Motion Planning and Robotics

chair: Tim Wylie

ACE 001

- *Motion Planning of Disk and Rectangular Robots (pdf)*
  Eduard Eiben, Iyad Kanj, Salman Parsa
- *Optimal Delivery with a Faulty Drone (pdf)*
  Jared Coleman, Evangelos Kranakis, Danny Krizanc, Oscar Morales-Ponce
- *Efficient Reconfiguration of Tile Arrangements by a Single Active Robot (pdf)*
  Aaron T. Becker, Sándor P. Fekete, Jonas Friemel, Ramin Kosfeld, Peter Kramer, Harm Kube, Christian Rieck, Christian Scheffer, Arne Schmidt
- *Improved Wake-Up Time For Euclidean Freeze-Tag Problem (pdf)*
  Sharareh Alipour, Arash Ahadi, Kajal Baghestani
  (remote – Video talk + Q&A)

CCCG Session 7B

Geometric Covering and Packing

chair: Stephane Durocher

ACE 003

- *Minimum-Weight Half-plane Hitting Set (pdf)*
  Gang Liu, Haitao Wang
- *Covering Radii of 3-Zonotopes and the Shifted Lonely Runner Conjecture (pdf)*
  David Alcántara, Francisco Criado, Francisco Santos
- *Square Packing with Asymptotically Smallest Waste Only Needs Good Squares (pdf)*
  Hong Duc Bui
- *Reverse Rush Hour is NP-Complete (pdf)*
  Jonathan Gabor, Aaron Williams

3:10 PM - 3:40 PM

CCCG Best Paper Presentation

chair: Shahin Kamali

ACE 001

Paper: The Kinetic Hourglass Data Structure for Computing the Bottleneck Distance of Dynamic Data
Authors: Elizabeth Munch, Elena Xinyi Wang, Carola Wenk
Speaker: Elena Xinyi Wang

3:40 PM — Conclusions and End of Program