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Galaxy Community Conference 2022
July 17-23, 2022

Courtyard by Marriott Minneapolis Downtown & University of Minnesota, Twin Cities
Minneapolis, Minnesota, United States

#UseGalaxy2022
Welcome!

Welcome to the 2022 Galaxy Community Conference (GCC2022)! The thirteenth annual gathering of the Galaxy Community, GCC2022 features one dedicated day of basic training, four days of mixed meeting and training, followed by three days of CollaborationFest. The meeting will have two plenary talks & sessions including long and lightning-format talks by invited researchers from around the world; poster and software demo sessions; birds-of-a-feather (BoF) meetups; social events; and training sessions. GCC2022 is all about getting together again so that we continue to build the Galaxy community and advance research around the world. We hope that you find ample opportunities to interact and have inspiring and creative discussions during your summer visit to beautiful Minnesota!

Thank you to all those who made this event possible! To our sponsors, conference hosts and organizers, workshop instructors, the Scientific Committee, BoF organizers, speakers, demo and poster presenters, and to everyone who contributed...a big THANK YOU!

- GCC2022 Organizing Committee
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**Code of Conduct**

We are committed to providing a welcoming and inspiring community for all. If you participate in GCC2022, then you too are committed to this goal.

GCC2022 will provide a harassment-free conference experience for everyone, regardless of race, gender, gender identity and expression, sexual orientation, disability, physical appearance, body size, age or religion. We do not tolerate harassment of conference participants in any form. Conference participants violating these rules may be sanctioned or expelled from the conference without a refund at the discretion of the conference organizers.

Details of the the Code of Conduct can be read in the Galaxy community Code of Conduct.

**COVID-19 Policy**

To protect participant safety, **masks are required during all GCC2022 events**, with the following exceptions:

- You are presenting
- You are actively eating / drinking
- You are outside

If you see someone who has forgotten to put their mask back on, please gently remind them. Participants who refuse to wear a mask, or show a repeated pattern of being unmasked will be barred from all remaining GCC2022 events, without a refund. This will be treated as a Code of Conduct violation.

In addition, **we ask each participant to test daily using a provided rapid test**. The tests will be provided by the conference at registration so please use them.

If you feel sick, or have had close exposure, or are testing positive, then do not attend in-person events. If you have already attended some events and become sick, please let the conference organizers know, and let anyone you have spent significant time around (masked) or some time around (unmasked) so they can take appropriate precautions.

Please, let’s keep each other safe.
Courtyard by Marriott Minneapolis Downtown
1500 S. Washington Ave.
Minneapolis, MN 55454

**Wifi**
Conference wifi is available for program attendees in meeting rooms.

**Network name:** GCC2022  
**Password:** GCC2022  
Guest wifi for use in hotel rooms given at check-in.

---

**Main Floor Meeting Rooms**

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**Third Floor Meeting Rooms**

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Conference Venues

CoFest at University of Minnesota

Walter Library
117 Pleasant St SE, Minneapolis, MN 55455

Toaster Innovation Hub
(Basement Level B)

Minnesota Supercomputing Institute (MSI)
(5th floor of Walter Library)

CoFest
Meet in hotel lobby at 8:30 a.m. to walk over to Walter Library

Walter Library Hours
Thursday ..................... 8 a.m. - 8 p.m.
Friday ........................ 8 a.m. - 6 p.m.
Saturday ..................... 12 - 6 p.m.
(Before/after these times, someone with card access will need to let you in.)
Meals

Breakfast is provided each morning of the conference at 8:00 a.m. Coffee, other beverages, and light snacks will be available during breaks. Lunch is provided all 4 days of the conference. Lunch is also provided on the CoFest days along with coffee. An opening reception with light appetizers and cash bar will be held on Sunday evening in the courtyard of the hotel. If you have any diet restrictions you have not previously communicated when registering, please let us know at the registration desk.

The official conference dinner is Tuesday evening at 7:00 p.m. A separate registration ticket is required to attend. Dinner will be in the courtyard of the hotel.

Social Media / Photo Sharing

Unless requested by the speaker, Tweeting and other social media activity are actively encouraged. Post early, post often. Twitter is the most active platform in the Galaxy community.

#UseGalaxy    @galaxyproject
#UseGalaxy2022  #ComeTogether

Wifi Network

Wifi is available throughout all conference facilities.

Wifi-name: GCC2022
Password: GCC2022

Presenter Needs

The main presentation room will provide a podium laptop for the talks. Presenters, please stop by the podium, contact the session chair and upload your slides prior to your scheduled session and download your presentation slides onto podium laptop. This will ensure the smoothest transition between the presenters.

Organizers of all events other than the talks in the main room (e.g., training, BoFs, demos, etc.) will need to provide their own laptop. A projector will be provided in those sessions with HDMI and Thunderbolt connectors. If your laptop requires a different type of connector, please bring it along.
## Schedule

### Day 1: Sunday, July 17
- 8:45-9:00 ..... Conference welcome
- 9:00-10:00 ..... Opening and keynote
- 10:00-10:20 ..... Break
- 10:20-11:20 ..... Poster / demo
- 11:20-12:20 ..... Dev talks
- 12:20-13:20 ..... Lunch
- 13:20-15:50 ..... Training
- 15:50-16:10 ..... Break
- 16:10-16:25 ..... Sponsor talk
- 16:30-17:15 ..... Tools talks
- 17:15-18:30 ..... BoFs
- 18:30-20:30 ..... Opening Reception

### Day 2: Monday, July 18
- 9:00-10:00 ..... Science talks
- 10:00-10:20 ..... Break
- 10:20-11:20 ..... Poster / demo
- 11:20-12:20 ..... Admin talks
- 12:20-13:20 ..... Lunch
- 13:20-15:50 ..... Training
- 15:50-16:10 ..... Break
- 16:10-16:25 ..... Sponsor talk
- 16:30-17:20 ..... Tools talks
- 17:20-18:30 ..... BoFs

### Day 3: Tuesday, July 19
- 9:00-10:00 ..... Outreach talks
- 10:00-10:20 ..... Break
- 10:20-11:20 ..... Poster / demo
- 11:20-12:20 ..... Dev talks
- 12:20-13:20 ..... Lunch
- 13:20-15:50 ..... Training
- 15:50-16:10 ..... Break
- 16:10-16:25 ..... Sponsor talk
- 16:30-17:20 ..... Tools talks
- 17:20-18:30 ..... BoFs
- 19:00-21:00 ..... Conference dinner

### Day 4: Wednesday, July 20
- 9:00-10:00 ..... Science talks
- 10:00-10:20 ..... Break
- 10:20-11:20 ..... Poster / demo
- 11:20-12:20 ..... Closing keynote
- 12:20-13:20 ..... Lunch
- 13:20-15:50 ..... Training
- 15:50-16:10 ..... Break
- 16:10-17:00 ..... Closing
- 17:00-18:30 ..... BoFs

### CoFest
- **Thursday, July 21 - Saturday, July 23**
  Meet in hotel lobby at 8:30 a.m. to walk over to Walter Library on the University of Minnesota campus. See page 10 for CoFest location map.
  Contact Miki Tufto from Sapphyre Group at 651-235-3700 if you walk over to Walter Library after 8:30 a.m. and cannot get into the building.
We have two exciting keynote speeches at this year’s GCC! Both speakers will tell us about their experiences working in the translational domain and how cutting edge analytical science is making its way into clinical practice. We’ll hear about the AI and ML algorithm development, real-life experiences, and explore current bottlenecks. But don’t let us tell you everything and come to the keynote events to hear it from the two influencers: Hongfang Liu and Christopher Tignanelli.

**Hongfang Liu** is professor at the Mayo Clinic in Rochester. She has devoted her research career to leveraging data science, AI, and informatics approaches to support clinical and translational science research. This included advances in natural language processing, algorithm development, and processes of their adoption at the point of care. She is a fellow of the American College of Medical Informatics and a leader of the Natural Language Processing Working Group and the American Medical Informatics Association.

Hongfang’s talk is titled “Open Health Natural Language Processing (OHNLP) Collaborative - An open science journey towards real-world implementation of clinical NLP” and more details available in the following abstract: The goal of the Open Health Natural Language Processing (OHNLP) Collaborative is to promote past and current open-source clinical NLP development efforts, encourage participation in advancing future efforts, and focus on an ethical artificial intelligence (AI) framework for dissemination and implementation. In this talk, I will briefly discuss clinical NLP in general, overview some of the systems and applications in clinical NLP, discuss past and ongoing achievements in OHNLP, and provide perspectives of the future directions in clinical NLP research and practice.
Keynote Speakers

Christopher Tignanelli is an MD and an associate professor at the medical school at UMN. As an Acute Care Surgeon, he sees patients in trauma, emergency surgery, and critical care. His research focuses on the development and validation of machine learning and AI-enabled decision support systems as well as the implementation, user-centered design, and scaling of interoperable clinical decision support tools. Among other distinctions, in 2021, he was named a “Health Care Hero” by the Minneapolis/St. Paul Business Journal for his innovative use of AI and informatics to improve healthcare for patients with COVID-19.

Christopher’s talk is titled “Comprehensive Rib Fracture Care Map delivered as a Clinical Decision Support System”, with a preview of the content available in the abstract: Evidence-based practices have been shown to improve clinical outcomes, however, evidence-based adherence varies. Clinical decision support systems (CDSS) have been shown to improve evidence-based adherence, reduce health disparities, and improve clinical outcomes. This presentation will discuss the role of clinical informatics to provide cognitive decision support to providers and nurses, show a specific example for how to develop clinical decision support systems, conduct usability testing, implement, and ultimately scale successful CDSS across 10 trauma centers. It will then show how we evaluate such systems using RE-AIM (an implementation science framework). Finally, it will show how we iteratively improve on such systems and develop, validate, and ultimately integrate AI into CDSS to facilitate best practice and optimize patient outcomes.
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Travel Fellowship

We are very pleased to announce that, thanks to an anonymous donation, we had additional funding donated in honor of James Taylor for 4 conference fellowships for the 2022 Galaxy Community Conference (GCC2022). These fellowships cover all conference registration costs and were available to students and post-docs based anywhere in the world.

This year’s travel fellowship recipients are:

**Bryan Raubenolt** - Genomic Medicine Institute, Lerner Research Institute, Cleveland Clinic, Cleveland, OH, USA

**Fabio Cumbio** - Genomic Medicine Institute, Lerner Research Institute, Cleveland Clinic, Cleveland, OH, USA

**Jayadev Joshi** - Genomic Medicine Institute, Lerner Research Institute, Cleveland Clinic, Cleveland, OH, USA

**Ray Sajulga** - National Marrow Donor Program/Be The Match, University of Minnesota, USA
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390 Editors and Advisors

Vint Cerf
Google

Valerie Taylor
Texas A&M

Krishnendu Chakrabarty
Duke University

Chieko Asakawa
IBM Japan

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1 editor, 2+ reviewers

Excellent review quality
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Relaxed reference formatting
Clarity is the only requirement

Press release & sharing tools
Maximize readership of your work

Great looking articles
Fully typeset article proofs

Straightforward submission
Easy to use, fast and loved by authors

peerj.com/computer-science

Years publishing 6
Subjects 42
Articles published 894
Monthly views 500,000*
Publication speed 35 days†
Impact Factor 1.39
Scimago Ranking 0.806
SNIP 1.895
Citescore 4.8

* All journals
† Median days to 1st decision
**Birds of a Feather (BoF) Meetups**

There is no better place than a Galaxy Community Conference to meet and learn from others doing high-throughput data analysis. GCC2019 includes Birds of a Feather (BoF) meetups that are informal gatherings based on participants’ shared interests. BoFs are encouraged throughout GCC2019, particularly during the flocking sessions each day. These sessions are time set aside specifically for BoF gatherings.

If you are interested in a BoF then just show up. The BoFs were planned when this program was printed. For the most current list, see [bit.ly/gcc2022bofs](bit.ly/gcc2022bofs).

If you want to organize a BoF, go to [bit.ly/gcc2022-submit-bof](bit.ly/gcc2022-submit-bof) for how to get one going. It’s never too late to start a BoF, and once one is proposed the organizers will get the word out about it.

---

**Sunday, July 17**
5:15-6:30 p.m.
- IDC - Intergalactic (reference) Data Commission, [sched.co/12mmz](sched.co/12mmz)
- microGalaxy, [sched.co/13OpD](sched.co/13OpD)

**Monday, July 18**
5:30-6:30 p.m.
- BYO Board Game, [sched.co/12moK](sched.co/12moK)
- Sequencing and Genomics of the Future, [sched.co/13V9n](sched.co/13V9n)
- Supporting remote workflows on distributed resources, [sched.co/13q6D](sched.co/13q6D)

**Tuesday, July 19**
5:20-6:30 p.m.
- At the edge of the Galaxy, the lonely life of a (small scale) local Galaxy server admin, [sched.co/12moO](sched.co/12moO)
- Yoga, [sched.co/12mo5](sched.co/12mo5)
- Building a global database of tool resource requirements, [sched.co/12mo5](sched.co/12mo5)

**Wednesday, July 20**
5:00-6:30 p.m.
- Galaxy & Training / Teaching, [sched.co/14G3r](sched.co/14G3r)
- International Galaxy Proteomics Meeting, [sched.co/12Tch](sched.co/12Tch)
- Galaxy Release Process, [https://sched.co/156AM](https://sched.co/156AM)
Social Events

GCC is one large social event for our community. When you’re free, skip checking your email and introduce yourself to the person next to you. You have at least one thing in common - you both have excellent taste in choosing conferences! You can even ask about topics on their badge. If you dig deeper, you’ll likely find that you have much more in common and maybe shared interests. Many fruitful collaborations have been initiated at GCC. Strike up a conversation!

Welcome Reception
Sunday, July 17
6:30-8:30 p.m.
Join us as we kick off GCC2022 with a welcome reception for all attendees (appetizers and cash bar) in the Outdoor Courtyard at the hotel.

Conference Dinner
Tuesday, July 19
7:00 pm-9:00 p.m.
The conference dinner will be on Tuesday evening at the hotel in the Outdoor Courtyard. You will need a separate registration ticket to attend dinner.

Dinners
Except for the conference dinner on Tuesday, the dinners are on your own. See the map on the back page with suggested restaurants and bars in Minneapolis or learn of all the dinner options in Minneapolis at www.minneapolis.org/food-drink.

Birds of a Feather Meetups
BoFs aren’t focused on social interactions, but they are an excellent way to meet other participants that are eager to discuss a common interest. The BYO Board Game or Yoga BoFs, however, are all about relaxing with your fellow participants.
Happenings Around Town

Planning Essentials
All the Minneapolis planning essentials you need in one place. minneapolis.org/plan-your-trip

Food Scene
Minneapolis is where global flavors meet ferris wheel cocktails! The innovative Minneapolis food and drink scene is ready to impress – whatever your tastes. Whether it’s the famous Jucy Lucy cheese-filled burger at Matt’s, a signature Old Fashioned at Parlour, fine dining at its finest at Spoon and Stable, trying to choose between 18 ethnic restaurants and food vendors at the Midtown Global Market, or two scoops of artisanal ice cream at Milkjam Creamery. We just ask that you bring your appetite. minneapolis.org/food-drink

Get ready to walk, dance, shop, run, cheer - all day long!
Explore Minneapolis the way it was meant to be explored – through multiple outfit changes. Throw on that jersey and cheer on your favorite sports teams. Bring your purple dancing shoes and find your way to the world famous First Ave. Realize you’re going to need more outfits? Don’t worry - we have tax-free clothing. Whatever you do – just don’t pack lightly. minneapolis.org/things-to-do

Events Around Town
There is no shortage of events happening in Minneapolis all year long. We are an active community of artists, creators, musicians, foodies, dancers, runners & bikers – a community of doers that can’t stand the thought of missing out. With something always going on, we’re confident you’ll find something you won’t want to miss too. minneapolis.org/calendar

Aquatennial
GCC2022 happens during the Aquatennial festival (7/20-23). Some say it’s the “Best Days of Summer” with great events. The Torchlight Parade and 5k will take place again, the tennis classic is back in its usual great for, and this year there is even the Candid Canines Film Fest which is a fan submitted doggo video to be shown on the Target Field Station screen. Of course, the Target Fireworks, a top 5 national fireworks display, will light up the skyline and the river for everyone aquatennial.com
GCC2022 is a community effort from planning to post conference publishing and feedback. In addition to all the participants, presenters, and instructors, here are the people who make it happen.

**GCC2022 Organizing Committee**
- Assunta DeSanto, Penn State University, U.S.A.
- Beatriz Serrano-Solano, University of Freiburg, Germany
- Dave Clements, Anaconda, U.S.A.
- Enis Afgan, Johns Hopkins University, U.S.A.
- Gareth Price, QCIF, Australia
- James Wilgenbusch, University of Minnesota, U.S.A.
- Jenn Vessio, Johns Hopkins University, U.S.A.
- JJ Johnson, University of Minnesota, U.S.A.
- Pratik Jagtap, University of Minnesota, U.S.A.
- Sarah Landwehr, University of Minnesota, U.S.A.
- Simon Gladman, Australian BioCommons, University of Melbourne, Australia
- Subina Mehta, University of Minnesota, U.S.A.
- Tim Griffin, University of Minnesota, U.S.A.

**Scientific Program Committee**
- Assunta DeSanto, Penn State University, U.S.A.
- Beatriz Serrano-Solano, University of Freiburg, Germany
- Enis Afgan, Co-chair, Johns Hopkins University, U.S.A.
- Subina Mehta, Chair, University of Minnesota, U.S.A.

**Scientific Program Members**
- Adam Herman, University of Minnesota, U.S.A.
- Alex Feltus, Clemson University, U.S.A.
- Anna Syme, Melbourne Bioinformatics, Australia
- Anne Claire Fouilloux, University of Oslo, Norway
- Art Eschenlauer, University of Minnesota, U.S.A.
- Beáta Szathmáry, University of Freiburg, Germany
- Carolina Gómez-Gracia, University of Freiburg, Germany
- Christy Henzler, University of Pennsylvania, U.S.A.
- Dan Blankenberg, Cleveland Clinic Lerner Research Institute, U.S.A.
- David Morais, Université de Sherbrooke, Canada
- Delphine Lariviere, Penn State University, U.S.A.
- Enis Afgan, Johns Hopkins University, U.S.A.
- Giulio Formenti, Rockefeller University, U.S.A.
- Irina Makarevitch, Hamline University, U.S.A.
- Jeff Leek, Johns Hopkins University, U.S.A.
- Jeremy Goecks, Oregon Health & Science University, U.S.A.
- Kjell Petersen, University of Oslo, Norway
- Lauren Mills, University of Minnesota, U.S.A.

Continued on page 22...
GCC2022 Organizers

Scientific Program Members (continued)
• Michael Kofia, International Centre of Insect Physiology and Ecology (icipe), Kenya
• Natalie Kucher, Johns Hopkins University, U.S.A.
• Pablo Moreno, European Molecular Biology Laboratory’s European Bioinformatics Institute (EMBL-EBI), United Kingdom
• Peter van Heusden, University of the Western Cape; South African National Bioinformatics Institute (SANBI), South Africa
• Pratik Jagtap, University of Minnesota, U.S.A.
• Salvador Capella, Barcelona Supercomputing Center, Spain
• Sara Riazi, University of New Haven, U.S.A.
• Saskia Hiltemann, Erasmus Medical Center Erasmus University Rotterdam
• Sonika Tyagi, Monash University, Australia
• Subina Mehta, University of Minnesota, U.S.A.
• Sveinung Gundersen, University of Oslo, Norway
• Thomas Klingström, Swedish University of Agricultural Sciences, Sweden
• Timothy Griffin, University of Minnesota, U.S.A.
• Tyler Jubenville, University of Minnesota, U.S.A.
• Nuwan Goonasekera, University of Melbourne, Australia
• Wendi Bacon, The Open University, U.S.A.

Training Coordinators
Training Day
• Helena Rasche, ErasmusMC, Avans Hogeschool, Netherlands
• Saskia Hiltemann, ErasmusMC, Netherlands

In Conference Training
• Assunta DeSanto, Penn State University, U.S.A.
• John Davis, Johns Hopkins University, U.S.A.

CoFest Organizers
• Assunta DeSanto, Penn State University, U.S.A.
• Dannon Baker, Johns Hopkins University, U.S.A.
• JJ Johnson, University of Minnesota, U.S.A.

Photographer
• John Davis, Johns Hopkins University, U.S.A.

EGD2022
European Galaxy Days
Oct 3-7, 2022
Freiburg, Germany
galaxyproject.org/events/2022-10-egd/
Scavenger Hunt Locations

During the #UseGalaxy2022 attendees will take part in a scavenger hunt by taking selfies at the following destinations and post them in the Slack channel “ScavengerHunt”. Attendees with selfies at the most locations will be awarded prizes!

**Goldy Gopher Statue**
Walking, NiceRide bikes, Campus Connector bus
44°58'23.2"N 93°14'05.5"W

**Shoe tree**
Walking, NiceRide bikes
44°58'21.8"N 93°14'30.2"W

**The Spannungsfeld near UMN Physics Building**
Walking, NiceRide bikes, Campus Connector bus
44°58'30.4"N 93°13'52.2"W

**Stone Arch Bridge**
Walking, NiceRide bikes, bus
44°58'50.7"N 93°15'13.0"W

**UMN Armory Building**
Walking, NiceRide bikes, Campus Connector bus
44°58'39.0"N 93°13'57.8"W

**Spoonbridge & Cherry Sculpture**
NiceRide bikes, bus, Uber/Lyft
44°58'12.9"N 93°17'20.5"W

**Lighthouse at Boom Island Park**
Walking, NiceRide bikes, bus
44°59'35.0"N 93°16'15.5"W

**Weisman Art Museum**
Walking, Campus Connector bus
44°58'24.1"N 93°14'14.1"W

**Huntington Bank Stadium**
Walking, Campus Connector bus
44°58'36.7"N 93°13'34.9"W

**Northrop Mall Steps**
Walking, NiceRide bikes
44°58'33.7"N 93°14'07.4"W

**The Bull Statues at the St. Paul Campus**
Campus Connector bus, NiceRide bikes
44°58'56.0"N 93°11'08.5"W

**Bell Museum**
Campus Connector bus, NiceRide bikes, walking (upon arrival at St. Paul Campus):
44°59'29.4"N 93°11'14.6"W

**Lake Harriett Band Shell**
NiceRide bikes, bus, Uber/Lyft
44°55'42.3"N 93°18'26.0"W

**Prince Mural (Downtown)**
Walking, NiceRide bikes, bus
44°58'41.0"N 93°16'37.9"W
Meet Minneapolis

Visit the Meet Minneapolis website for a list of places to dine, eat, and play, at minneapolis.org.