MITCHELL JONES

Software engineer and computational geometer

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SUMMARY

A Ph.D. candidate and theoretical computer scientist with extensive experience in developing efficient algorithms for problems in combinatorial optimization and computational geometry. Eager to use his theoretical knowledge and previous technical experience to solve a variety of algorithmic challenges in industry.

EDUCATION

Ph.D. in Computer Science

University of Illinois at Urbana-Champaign

Aug 2016 – Present

- Expected graduation August 2021
- Research interests: computational geometry, randomized & approximation algorithms, combinatorial optimization
- Thesis: In the Search for Geometric Orders, Centers, and Separation
- Advisor: Sariel Har-Peled

Bachelor of Computer Science and Technology (Advanced)

University of Sydney

Feb 2012 – Nov 2015

- Graduated with Honors Class I and the University Medal
- Advisor: Julián Mestre
- Thesis: The Maximum Facility Location Problem
- Published in Journal of Computational Biology [CEJM16]

SKILLS

Primary programming languages

Python | Java | C++ | LaTeX

See this GitHub repository for examples of some algorithms and common data structures implemented in Java and C++.

Secondary skills

HTML/CSS | Javascript | SQL | Git | Markdown | CGAL (Computational Geometry Algorithms Library)

Previously used

PHP | C | C# | Objective-C

Previous experience with many other web technologies, including Django, MongoDB, Neo4j, jQuery, and Bootstrap.

EXPERIENCE

Research and teaching assistant

University of Illinois at Urbana-Champaign

Aug 2016 – Present | Champaign, IL, USA

- Worked with Sariel Har-Peled as a research assistant
- Developed randomized and approximation algorithms for various problems in computational geometry (see selected publications)
- Teaching assistant for graduate and undergraduate algorithms classes (included weekly labs, grading, and office hours)

Research and teaching assistant

University of Sydney

Jul 2013 – Jun 2016 | Sydney, Australia

- Worked with Julián Mestre as a research assistant
- Developed new algorithms for computing treewidth of a graph—led to a paper in Algorithmica [GGJ+19]
- Ran experiments to compare against previous approaches, code submitted to academic programming competition (see the GitHub repo)
- Teaching assistant for various CS classes (included weekly labs and grading)

Software engineering intern

Google

Nov 2015 – Feb 2016 | Sydney, Australia

- Worked with the social & discovery team
- Built internal tools
- Required Java and Javascript

Software engineering intern

Google

Nov 2014 – Feb 2015 | Sydney, Australia

- Worked with the Google Chrome team
- Developed hosted apps for Mac
- Required C++ and Objective-C

OUTREACH

CS Grad Ambassador

2017 – 2020 Champaign, IL, USA

- Ambassador connects with incoming graduate students
- Meet on visit days to answer questions they have about the grad program or life at UIUC

Zero Robotics Mentor

2015 – 2016 Sydney, Australia

- Mentor for the Zero Robotics for two years when it was piloted in Australia
- Each mentor is assigned a team of students from a high school, where they compete in an international programming challenge

NCSS Challenge tutor

2012 – 2015 Sydney, Australia

- Yearly online Python programming competition for high school students
- Regularly helped students with the programming tasks via an online forum

NCSS Summer school tutor

2014 Sydney, Australia

- Programming tutor for a ten day summer school, which brings together students in grades 11 and 12
- Ran labs on teaching Python, HTML, CSS, JavaScript, and SQL

ACHIEVEMENTS & AWARDS

2019

- Mavis Future Faculty Fellow award (MF3)
- Ranked as excellent teacher by students for the largest undergraduate algorithms class at UIUC (CS374; list compiled by the University of Illinois Center for Innovation in Teaching & Learning)

2015

- The Allan Bromley Prize for best honours thesis

2013

- HEDLOC Undergraduate Prize for Algorithms

2013 – 2015 (awarded annually)

- University of Sydney Academic Merit Prize
- Dean's List of Excellence in Academic Performance
- University of Sydney, School of IT's High Honour Roll

SELECTED PUBLICATIONS

Conference Proceedings

[HJ20a] S. Har-Peled and M. Jones. *Fast algorithms for geometric consensuses*. *Symposium on Computational Geometry (SoCG 2020)*, 50:1–50:16, 2020.

[HJR20] S. Har-Peled, M. Jones, and S. Rahul. *Active learning a convex body in low dimensions*. *International Colloquium on Automata, Languages and Programming (ICALP 2020)*, 64:1–64:17, 2020.

[HJ19] S. Har-Peled and M. Jones. *Journey to the center of the point set*. *Symposium on Computational Geometry (SoCG 2019)*, to appear in ACM Transactions on Algorithms (TALG). 41:1–41:14, 2019.

Journal Articles

[CHJ20] T. M. Chan, S. Har-Peled, and M. Jones. *On locality-sensitive orderings and their applications*. *SIAM Journal on Computing*, 49(3): 583–600, 2020. Originally appeared in ITCS 2019.

[HJ20b] S. Har-Peled and M. Jones. *On separating points by lines*. *Discrete & Computational Geometry*, 63(3): 705–730, 2020. Originally appeared in SODA 2018.

[GGJ+19] S. Gaspers, J. Gudmundsson, M. Jones, J. Mestre, and S. Rümmele. *Turbocharging treewidth heuristics*. *Algorithmica*, 81(2): 439–475, 2019. Originally appeared in IPEC 2016.

[CEJM16] S. Canzar, K. M. Elbassioni, M. Jones, and J. Mestre. *Resolving conflicting predictions from multimapping reads*. *Journal of Computational Biology*, 23(3): 203–217, 2016.