Ron Estrin

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EDUCATION

Ph.D Candidate (Expected defense in Spring 2019) **2014 - 2019**

Institute for Computational and Mathematical Engineering

Stanford University, Stanford, CA

Advisors: Michael Saunders and Yinyu Ye

B.Sc. with Distinction **2010 - 2014**

Combined Honours Math and Computer Science

University of British Columbia, Vancouver, BC

ACADEMIC HONOURS AND AWARDS

Centennial Teaching Assistant Award (School of Engineering) **2018**

- For outstanding service and dedication to classroom instruction for Stanford students.

ICME Teaching Fellow **2018**

- Designation recognizing students with significant teaching experience.

SIAM Applied Linear Algebra Student Travel Award **2018**

ICME Excellence in Teaching Award **2017**

- Awarded to up to two students for outstanding teaching service.

Gene Golub Fellowship Award **2014**

- For academic excellence and research potential for incoming ICME students.

Governor General's Academic Silver Medal **2014**

- For highest academic standing in UBC's Faculty of Science among graduating class.

Dr. R. D. James Medal in Mathematics **2014**

- For student in Math Dept. with most outstanding record and promise in the field.

CRA Outstanding Undergraduate Award Honourable Mention **2014**

PROFESSIONAL EXPERIENCE

Google, Mountain View, CA **Summer 2017**

PhD Research Intern, LASER Team

- Studied new approach to low-rank matrix completion with applications to recommendation systems (such as movie or music recommendations) and word embeddings.
- Implemented high performance solver for alternating least-squares in Python using NumPy and SciPy for low-rank matrix completion.
- Demonstrated cases where proposed variant outperforms traditional low-rank matrix completion approach.

University of British Columbia, CS Department, Vancouver, BC **Summer 2016**

Research Assistant

- Developed family of iterative solvers for (possibly non-symmetric) saddle point systems arising from engineering problems under the supervision of Dr. Chen Greif.
- Showed methods in this new family are often competitive with existing approaches.

Microsoft, Redmond, WA **Summer 2015**

Software Development Engineering Intern, Elastic Scale Team

- Implemented feature for distributed database transactions in the cloud for SQL Server.
- Project was completed from scratch, with design document, testing and implementation accomplished within the internship.

Microsoft, Redmond, WA **Summer 2014**

Software Development Engineering Intern, Elastic Scale Team

- Designed time synchronization scheme for Azure datacenters across the world.
- Implemented prototype of scheme in C# as Azure Cloud Service.
- Prototype achieved millisecond synchronization within datacenters, sub-second synchronization across datacenters.

Google, Waterloo, ON **Summer 2013**
Google Summer Software Engineering Intern, Mobile Gmail Team

- Developer for mobile and iOS Gmail, client and server-side, working in Java, Javascript.
- Responsible for writing design documents, implementation, and testing of projects.
- Intern projects resulted in first network responses to return 75% faster than before.

University of British Columbia, Math Department, Vancouver, BC **Summer 2012**
NSERC USRA Research Assistant

- Worked with Dr. Richard Anstee on problems in Extremal Hypergraph Theory.
- Discovered and proved theorems that are recorded in booklet of notes.

PEER REVIEWED PUBLICATIONS

1. R. Estrin, D. Orban, and M. A. Saunders. LNLQ: An iterative method for least-norm problems with an error minimization property. *SIAM J. Matrix Anal. Appl.*, 2018. In review.
2. R. Estrin, D. Orban, and M. A. Saunders. Euclidean-norm error bounds for SYMMLQ and CG. *SIAM J. Matrix Anal. Appl.*, 2018. Accepted for publication.
3. R. Estrin and C. Greif. SPMR: a family of saddle-point minimum residual solvers. *SIAM J. Sci. Comput.*, 40(3):A1884–A1914, 2018.
4. R. Estrin and M. P. Friedlander. A perturbation view of level-set methods for convex optimization. *Mathematics of Computation*, 2018. In review.
5. R. Estrin, D. Orban, and M. A. Saunders. LSLQ: An iterative method for linear least-squares with an error minimization property. *SIAM J. Matrix Anal. Appl.*, 2017. Accepted for publication.
6. R. Estrin and C. Greif. Towards an optimal condition number of certain augmented Lagrangian-type saddle-point matrices. *Numer. Linear Algebra Appl.*, 23(4):693–705, 2016.
7. R. Estrin and C. Greif. On nonsingular saddle-point systems with a maximally rank-deficient leading block. *SIAM J. Matrix Anal. Appl.*, 36(2):367–384, 2015.

PAPERS IN PROGRESS

8. R. Estrin, M. P. Friedlander, D. Orban, and M. A. Saunders. Implementing a smooth exact penalty function for equality-constrained nonlinear optimization. 2018.
9. R. Estrin, M. P. Friedlander, D. Orban, and M. A. Saunders. Implementing a smooth exact penalty function for constrained nonlinear optimization. 2018.

TEACHING

Instructor: CME 258: Libraries for Numerical Linear Algebra and Optimization **Spring 2018**
Instructor: Linear Algebra ICME Refresher Course **Summer 2016**

Teaching Assistant: CME 307: Optimization **Winter 2017**
Head Teaching Assistant: CME 302: Numerical Linear Algebra **Fall 2016, 2017**
Teaching Assistant: CME 302: Numerical Linear Algebra **Fall 2015**
Undergraduate Teaching Assistant: Math Portion of Science One **2012**

CONFERENCE PRESENTATIONS

Pacific Northwest Numerical Analysis Seminar. Vancouver, BC. **Oct 2018**
SIAM Annual Meeting. Portland, OR. **July 2018**
SIAM Applied Linear Algebra Poster Session. Hong Kong. **May 2018**
Conference on High Performance Scientific Computing. Hanoi, Vietnam. **Mar 2018**
SIAM Computational Science and Engineering. Atlanta, GA. **Feb 2017**
SIAM Annual Meeting Poster Session. Boston, MA. **July 2016**

SEMINAR PRESENTATIONS

UBC SCAIM Seminar. University of British Columbia. **Sept 2018**
Sandia National Labs. Albuquerque, NM. **Feb 2018**
Stanford LA/OPT Seminar. Stanford University. **Oct 2017**
ICME Student Seminar. Stanford University. **Oct 2016**

SERVICE

ICME Computational Consulting **2014 - 2018**

- C^2 is a free consulting service offered by ICME students for the Stanford academic community for any help they may need with their computational, numerical or mathematical problems.
- Leader of C^2 from 2015-2017.

UBC Math Circle Co-Leader **2012 - 2014**

- Coordinated group of volunteers for high school outreach program.
- Oversaw development of faculty lectures and problem sets for students.

Journal Reviewing

- SIAM Journal on Optimization (1 review) **2018**
- SIAM Journal on Matrix Analysis (1 review) **2016**
- SIAM Journal on Scientific Computing (4 reviews) **2016**
- Numerical Algorithms (2 reviews) **2016**

SKILLS

Programming Languages: Julia, MATLAB, Python, C/C++, C#, Java, LaTeX
Languages: English (fluent), Russian (working proficiency)

EXTRACURRICULAR ACTIVITIES

Taekwondo

- Competed for Stanford's Taekwondo team.
- Won the silver medal at the 40th and 42nd National Collegiate Taekwondo Championships in the red belt, welter weight division.

Tennis

- Instructed group lessons with students ranging from children to adults.
- Competed in local tournaments up to the provincial level.