Jonathan Goldfarb

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Education

Florida Institute of Technology **Melbourne, FL**
PhD, Applied Mathematics *Spring 2016*
Dissertation Topic: *On the Optimal Control of Free Boundary Problems for Second Order Parabolic Equations*

Florida Institute of Technology
BS, Environmental Sciences *2009*

Experience

Professional

Harris Corporation
Software Engineer *May 2016–December 2016*
- Develop distributed and parallel computing capabilities (Scala/Java/Python).

Academic

Florida Institute of Technology **Melbourne**
Assistant Professor and Director of Mathematics Advancement Center *August 2016–Present*
- Manage team of 20+ graduate teaching assistants, tutors, and administrative staff.
- Support advancement of mathematics at undergraduate and graduate levels.
- Develop computational tools to efficiently schedule and manage students and staff.

Florida Institute of Technology **Melbourne**
Graduate Student Assistant *August 2009–May 2012, August 2015–May 2016*
- Instructional experience in partial differential equations, applied statistical analysis, and mathematical modeling
- Developed MATLAB, R, and Julia models for applications in statistics and physics and delivered training on computational tools.

Florida Tech REU in PDEs and Dynamical Systems
Graduate Mentor *May 2014–August 2014, May 2015–August 2015*
- Lead NSF-supported research group working under PI Dr. Ugur Abdulla in the fields of Nonlinear PDEs, Inverse Free Boundary Problems, and Dynamical Systems and Chaos Theory.
- Develop high performance C, MATLAB, and Julia implementations of research codes.
- Created website and custom application management system implemented in PHP/SQL, with Python (back-end/data processing) and Javascript (front-end).

Selected Publications and Talks

- U. G. Abdulla and J. Goldfarb. Frechet differentability in Besov spaces in the optimal control of parabolic free boundary problems. *Journal of Inverse and Ill-Posed Problems*, 26(2), 2017. doi: 10.1515/jiip-2017-0014. URL `https://arxiv.org/abs/1604.00057`.
- Ugur G. Abdulla, Luke Andrejek, Christie Campbell, Jian Du, Jonathan Goldfarb, and Adam Prinkey. Evolution of free boundaries for the nonlinear Fokker-Planck equation. *Joint Mathematics Meetings*, January 2016. URL `http://jointmathematicsmeetings.org/amsmtgs/2181_abstracts/1116-35-101.pdf`.

Skills

Languages: C, C++, C#, FORTRAN, IDL, Java, Julia, LaTeX, Perl, PHP, Python, R, SQL

Platforms & Tools: Linux, Docker, IDV, Grads, Git, MPI, MATLAB, PETSc, Sage, SPSS, Sundials, ViSit

Research Interests

PDE: Inverse problems, mathematical physics and modeling, qualitative theory for nonlinear equations, free boundary and control problems, degenerate and non-uniformly parabolic equations

High-Performance Computing, **Modeling and Simulation**, **Signal and Image Processing**

Professional Affiliations

- **American Mathematical Society** — AMS
- **Society for Industrial and Applied Mathematics** — SIAM
- **Mathematics of Climate Research Network** — MCRN

Selected Awards

- Outstanding Graduate in Applied Mathematics at Florida Institute of Technology, 2011–2012, 2013–2014, 2015–2016.
- SIAM student chapter award for outstanding efforts, 2012–2013 and 2013–2014.

More details in my CV at http://jgoldfar.github.io/media/cv.pdf.