Thomas Lynn

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TECHNICAL SKILLS

Advanced: MATLAB | C | CUDA | LaTeX
Proficient: Python: NumPy, TensorFlow, Keras, OpenAI Gym | Excel | Mathematica | MPI
Basic: Python: Pandas, PyTorch | R | SQL | Java | Processing | OpenACC | Aspen HYSYS

EDUCATION

Northwestern University, McCormick School of Engineering | Evanston, IL

PhD Candidate in Engineering Sciences and **Applied Math** (ESAM) Expected Dec 2020
MS in Engineering Sciences and **Applied Math** June 2016
NSF Graduate Research Fellowship Honorable Mention (2016)

University of Colorado, Boulder | Boulder, CO

BS in **Applied Mathematics** May 2014
BS in **Chemical Engineering** (Minor: *Chemistry*)
Summa cum laude | Active Learning Award (for research, service, and professional learning)

SELECTED PUBLICATIONS

Two first author paper and one second author paper published

- **T. F. Lynn**, J. M. Ottino, P. B. Umbanhowar, R. M. Lueptow "Identifying Invariant Ergodic Subsets and Barriers to Mixing ...," Physical Review E (impact factor 2.353) **101**, 012204 (2020).
- **T. F. Lynn**, L. D. Smith, J. M. Ottino, P. B. Umbanhowar, R. M. Lueptow "Cutting and shuffling a hemisphere: Nonorthogonal axes," Physical Review E (impact factor 2.353) **98**, 032204 (2019).

RESEARCH AND RELATED EXPERIENCE

Ottino & Lueptow Group (ChemE, MechE, ESAM) | Evanston, IL | Grad. Researcher June 2016 – Present

- Connected different **granular material** and **mixing** to mathematical analyses and dynamical systems
- Communicated complex mathematical ideas regarding mixing to a broad audience
- Authored algorithms for high performance computing and large scale parameter sweeps of complex systems
- Performed **Monte Carlo** experiments and implemented a **genetic algorithm** for elucidating important mixing mechanisms
- Developed machine learning models for optimizing mixing
  - Supervised learning of a new mixing algorithm (accuracy of roughly 80%)
  - Reinforcement learning using DDPG to extract new mixing strategies (ongoing)
- Acquired and presented complex data from a mixing dynamical system and the structure underlying it
- Published two first author papers and presented talks and posters at four conferences

Northwestern School of Professional Studies | Chicago, IL | Math & Stats tutor Sept. 2018 – Dec. 2019

- Instructed students in professional careers one-on-one in mathematics and statistics
- Facilitated and taught the communication of complex ideas and development of critical thinking/reading skills

Jacobs Engineering | Denver, CO | Oil and Gas Process Intern Summer 2013

- Modeled and designed oil and gas processes on a team of 12+ experienced engineers
- Authored operating procedures and presented them in technical reports

LEADERSHIP ROLES

ESAM First Year Foundations Workshop | Evanston, IL | Co-Director Sept. 2016

- Organized and ran events to integrate incoming graduate students into the department
- Restructured the workshop to focus on resources available to incoming students

Theta Tau Fraternity | Boulder, CO | Treasurer Jan. 2013 – Jan. 2014

- Created the fraternity budget ($10,000) for the 2013-2014 school year with the executive board (5 members)
- Managed the member accounts of 48 fraternity members as well as other fraternity accounts