Thomas C. H. Lux

thomas.ch.lux@gmail.com   linkedin.com/in/thomas-ch-lux

Current Address	Sample Work	Permanent Address
available upon request	github.com/tchlux tchlux.info	*available upon request*

Education

Ph.D. Computer Science, (Expected) May 2020
Virginia Tech, Blacksburg, VA
- Areas: **Machine Learning, Approximation Theory, Computational Science**
- 13 paper publications, (*5 publications currently under review*)

B.S. Computer Science *Cum Laude with Honors in Major*, May 2016
Roanoke College, Salem, VA
- Minors: **Physics, Mathematics**
- Phi Beta Kappa, Upsilon Pi Epsilon, Pi Mu Epsilon, Omicron Delta Kappa, 2 paper publications

Skills

Predictive Modeling • Interpretable Models • Ethical Prediction • Convex Optimization
Black-Box Optimization • Nonparametric Statistics • Parallel Programming
Open Source Software • Mathematical Software • Python • C++ • Fortran
Data Science • Data Collection • Data Visualization • Algorithms • Research
Leadership • Team Building • Public Speaking • Improvisation • Community Building

Experience

Graduate Research Assistantship: Computer Performance Modeling
NSF funded project: *VarSys - Managing Variability for HPC, Cloud Computing, and Computer Security*
Virginia Polytechnic Institute and State University (Virginia Tech)
- *Hermite Quintic Spline Interpolation Math Software*:   *Jun. 2019 - present*
  Polynomial interpolation, splines, Fortran, Mathematical software
- *Nonparametric Modeling and Analysis*:   *Jun. 2017 - May 2019*
  LSHEP, Delaunay, SVR, MARS, NN, interpolation, regression, cross validation
- *Meshes for multivariate approximation*:   *Jun. 2017 - Feb. 2018*
  Box-Splines, Voronoi, CDF interpolation, Fortran, Mathematical software
- *Web-based visualization and analysis of data*:   *Sept. 2016 - May 2017*
  Python Django, JavaScript, HTML+CSS, RESTful API

NSF REU: Medical Informatics Experiences in Undergraduate Research
DePaul University and University of Chicago
- *Thresholded Hierarchical Itemset Clustering:*   *Summer 2015*
  SciKit learn, Matlab, SPSS, Python Qt, feature selection, itemset mining,
  decision trees, neural networks, evaluation metrics (Silhouette, AUC, MCC)

Undergraduate Funded Research and Independent Studies
Roanoke College Department of Math, Computer Science, and Physics
- *Machine learning:*   Topical overview, single/multi-layer perceptron, SVM's   *Spring 2015*
- *Parallel computing:* Multi-threading, forking, CUDA and MPI programming   *Fall 2014*
- *Sample based blob detection and tracking in computer vision*:   *Summer 2014*
  Key point detection (SIFT, SURF, FAST), optical flow tracking, blob detection
- *Analysis of Sensors for Robotic Localization and Mapping*:   *Summer 2013*
  Stochastic mapping, Kalman Filters, SLAM, Kinect / Ultrasonic sensors

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Honors, Awards, and Achievements	**Twice** invited Alumni Panelist for Roanoke College Open House **Thrice** invited Speaker: at Salem Rotary Club, Roanoke College Society of 1842 Banquet, Roanoke College Math, Computer Science, and Physics **Thrice** Roanoke College *Outstanding Achievement in Computer Science* award 1st place of 30 in Southeastern CCSC programming competition **Twice** 1st place in Southeastern CCSC Research competition	*Mar. 2018 & Mar. 2019* *Feb. 2015 - Nov. 2016* *2014 & 2015* *Nov. 2015* *Nov. 2013 & Nov. 2014*

Leadership at Virginia Tech	**Treasurer**, Computer Science Graduate Council **Student Representative**, Graduate Program Committee **Vice President / Cofounder**, Computer Science Graduate Council	*May 2019 - present* *Sep. 2018 - May 2019* *Nov. 2017 - May 2018*

Leadership at Roanoke College	**Resident Advisor**, Residence Life Staff (3 academic years) **President / Cofounder**, Upsilon Pi Epsilon Nu Chapter (CS honor society) **President**, Student Government Association (2 years, re-elected) **Treasurer**, Student Chapter ACM (2 years, re-elected)	*Aug. 2013 - May 2016* *Apr. 2015 - Apr. 2016* *Dec. 2013 - Dec. 2015* *May 2013 - May 2015*

Selected Publications	Lux, T.C.H., et al. (under review). Interpolation of sparse high-dimensional data. *Numerical Algorithms* (pp 1-26). Springer. Lux, T.C.H., et al. (under review). Metric Principle Component Analysis: On Identifying Important Subspaces for Approximation. *Spring Simulation Multiconference, High Performance Computing Symposium 2020* (p. 1-10). IEEE. Lux, T.C.H., et al. (accepted). Analytic Test Functions for Generalizable Evaluation of Convex Optimization Techniques. *SoutheastCon 2020* (pp. 1-7). IEEE. Lux, T.C.H., et al. (2019, November). A case study on a sustainable framework for ethically aware predictive modeling. *Proceedings of the International Symposium on Technology and Society 2019* (pp. 1-6). IEEE. Lux, T.C.H., et al. (2019, November). Least squares solutions to polynomial systems of equations with quantum annealing. *Quantum Information Processing* (pp. 1-16). Springer.

Career Objective

I am passionate about artificial intelligence (AI) and yearn to do significant research and experimentation towards creating societally useful AI. My work in predictive modeling, approximation theory, computational science, and black-box optimization have uniquely prepared me for *any role that requires predictions and explanations*. Although my interests are in AI, I am ready to serve any role that requires my skills. I value the ability to contribute meaningfully to a team, so long as I may be of service I will be happy.

Personal Statement

I value my abilities to listen, learn, and adapt more than anything. I hope that this document demonstrates my deep interest in *improving my surroundings* and *building community* while solving important problems. In my eyes, quality teamwork and clear communication are necessary for success. My skills are best demonstrated in action and I welcome personal conversations, tests, challenges, and interviews through any medium. Thank you for considering me for your team.

References Available Upon Request