

Tyler H. Chang – CV

Independent Researcher, Sr. Software Engineer

Mountain View, CA, USA

<https://thchang.github.io> <https://github.com/thchang>

EXPERIENCE

- Jun 2024 - Present. **Sr. Software Engineer: Siemens Digital Industry Software**, EDA / HAV Division
- Jun 2020 - May 2024. **Postdoctoral appointee: Argonne National Laboratory**, MCS Division
- Aug 2016 - May 2020. **Research fellow: Virginia Tech**, Dept. of Computer Science
- Jun 2019 - Dec 2019. **US DOE SCGSR awardee: Argonne National Laboratory**, MCS Division
- Feb 2016 - Aug 2016. **Research assistant: Old Dominion University**, Dept. of Computer Science

EDUCATION

- Ph.D., May 2020, Computer Science, Virginia Polytechnic Institute & State University (Virginia Tech)
- B.S., May 2016, Computer Science & Mathematics (double-major), Virginia Wesleyan University, *summa cum laude*

PUBLICLY AVAILABLE SOFTWARE

2023. ParMOO: Python library for parallel multiobjective simulation optimization. Release: 0.3.1
Devs: **T. H. Chang** (lead), S. M. Wild, and H. Dickinson¹ Primary Prog. Lang: **Python 3**
git: <https://github.com/parmoo/parmoo>
2022. VTMOPT: Solver for blackbox multiobjective optimization problems.
Devs: **T. H. Chang** (lead) and L. T. Watson Primary Prog. Lang: **Fortran 2008**
git: <https://github.com/vtopt/VTMOPT>
2020. DelaunaySparse: Interpolation via a sparse subset of the Delaunay triangulation.
Devs: **T. H. Chang** (lead), T. C. H. Lux, and L. T. Watson Primary Prog. Lang: **Fortran 2003**
git: <https://github.com/vtopt/DelaunaySparse>
2019. QAML: Quantum annealing math library.
Devs: T. C. H. Lux (lead), **T. H. Chang**, and S. S. Tipirneni Primary Prog. Lang: **Python 3**
git: <https://github.com/tchlux/qaml>

SELECTED PUBLICATIONS (FROM 32 INDEXED ON SCHOLAR)

2023. **T. H. Chang**, J. R. Elias, S. M. Wild, S. Chaudhuri, and J. A. Libera. A framework for fully autonomous design of materials via multiobjective optimization and active learning: challenges and next steps. *In 11th Intl. Conf. on Learning Representation (ICLR 2023), Workshop on Machine Learning for Materials (ML4Materials)*. **url:** <https://openreview.net/forum?id=8KJS7RPjMqG>
2023. **T. H. Chang** and S. M. Wild. ParMOO: a Python library for parallel multiobjective simulation optimization. *Journal of Open Source Software* 8(82), Article 4468, 5 pages. **doi:** 10.21105/joss.04468
2022. **T. H. Chang**, L. T. Watson, J. Larson, N. Neveu, W. I. Thacker, S. Deshpande, and T. C. H. Lux. Algorithm 1028: VTMOPT: Solver for blackbox multiobjective optimization problems. *ACM Transactions on Mathematical Software* 48(3), Article 36, 34 pages. **doi:** 10.1145/3529258
2020. **T. H. Chang**, L. T. Watson, T. C. H. Lux, A. R. Butt, K. W. Cameron, and Y. Hong. Algorithm 1012: DELAUNAYSPARSE: Interpolation via a sparse subset of the Delaunay triangulation in medium to high dimensions. *ACM Transactions on Mathematical Software* 46(4), Article 38, 20 pages. **doi:** 10.1145/3422818

¹= DOE SULI (undergraduate intern) at Argonne in my supervision

Research Funding Raised

3. Declined for FY 2024. **Key contributor**, \$400K/y for 1 year. *High performance computing for development of critical thermo-dynamic inputs for next generation thermal barrier coatings*, external grant
2. Mar 2023 - Sep 2023. **Co-PI**, \$50K/y for 1 year. *A Scalable Multi-Physics Optimization Framework for Particle Accelerator Design*, institutional seed funding (LDRD 2023-0246)
1. Jun 2019 - Dec 2019. **Primary awardee**, \$3K/mo for 6 months. *An Adaptive Weighting Scheme for Multiobjective Optimization*, DOE award for PhD students (DE-SC0014664)

Research Fellowships Awarded

5. Aug 2016 - May 2020. Cunningham Doctoral Fellowship, Virginia Tech, Graduate School, guaranteed research funding
4. Aug 2019 - May 2020. Davenport Leadership Fellowship, Virginia Tech, College of Engineering, \$4k supplemental award
3. Aug 2018 - May 2019. Pratt Fellowship, Virginia Tech, College of Engineering, \$4k supplemental award
2. Aug 2017 - May 2018. Pratt Fellowship, Virginia Tech, College of Engineering, \$4k supplemental award
1. Aug 2016 - May 2017. Davenport Leadership Fellowship, Virginia Tech, College of Engineering, \$4k supplemental award

Misc. Awards and Accomplishments

4. Jan 2021. Nominee for Outstanding Dissertation Award, Virginia Tech, Graduate School
3. Apr 2016. Outstanding Student in Computer Science & Mathematics, Virginia Wesleyan University
2. Feb 2016. ACM International Collegiate Programming Competition (ICPC), winning team for CNU site, VA, USA
1. Feb 2015. ACM International Collegiate Programming Competition (ICPC), winning team for CNU site, VA, USA

Interns Advised

- Jun 2022 - Aug 2022. Manisha Garg (UIUC), NSF MSGI (PhD student intern) at Argonne
- Jun 2022 - Aug 2022. Hyrum Dickinson (UIUC), DOE SULI (undergraduate intern) at Argonne

Teaching

- Jan 2022 - Present. **Adjunct Professor: College of DuPage**, Dept. of Computer and Info. Science (Intro to Python)
- Jan 2020 - May 2020. **Instructor of Record: Virginia Tech**, Dept. of Computer Science (Data structures and algorithms)

Journal / Conference Referee

INFORMS Journal on Computing (2023–Present); ACM Transactions on Mathematical Software (2021–Present); Quantum Information Processing (2021–Present); The Visual Computer Journal (2021); MDPI: Mathematical and Computer Applications (2021); Journal of Machine Learning Research (2019); ICIAM (2023); Supercomputing (2021); IEEE SoutheastCon (2018–2020)

Minisymposium Organizer

Multiobjective Optimization Software track in SIAM Conference on Optimization (2021); Geometric Methods for Machine Learning track in SIAM Conference on Computational Science and Engineering (2021)