Tyler Chen

Bio Sketch

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https://chen.pw

(A) PROFESSIONAL PREPARATION

Instutition	Location	Major/Area	Degree & Year
Tufts University	Medford, MA	Mathematics, Physics	BS, 2017
University of Washington	Seattle, WA	Applied Mathematics	PhD, 2022 (expected)

(B) APPOINTMENTS

Title	Institution	Department	Dates
academic student employee (instructor)	U. of Washington	Applied Math	SP21
academic student employee (instructor)	U. of Washington	English	AU20, WI21
academic student employee (TA)	U. of Washington	Math	AU17, WI18, AU18
academic student employee (TA)	U. of Washington	Applied Math	W19

(C) PRODUCTS

(i) Products most closely related to the proposed project.

1. T. Chen, T. Trogdon, and S. Ubaru. "Analysis of stochastic Lanczos quadrature for spectrum approximation". In: *Proceedings of the 37th International Conference on Machine Learning.* Proceedings of Machine Learning Research. PMLR, 2021. arXiv: 2105.06595 [cs.DS]
2. T. Chen, A. Greenbaum, C. Musco, and C. Musco. *Error bounds for Lanczos-based matrix function approximation.* 2021. arXiv: 2106.09806 [math.NA]
3. T. Chen and E. C. Carson. "Predict-and-recompute conjugate gradient variants". In: *SIAM Journal on Scientific Computing* 42.5 (2020), A3084–A3108. DOI: 10.1137/19m1276856. arXiv: 1905.01549 [cs.NA]
4. A. Greenbaum, H. Liu, and T. Chen. "On the Convergence Rate of Variants of the Conjugate Gradient Algorithm in Finite Precision Arithmetic". In: *SIAM Journal on Scientific Computing* (July 2021), S496–S515. DOI: 10.1137/20m1346249. arXiv: 1905.05874 [cs.NA]
5. PETSc. *PIPEPRCG method.* URL: https://gitlab.com/petsc/petsc/-/blob/main/src/ksp/ksp/impls/cg/pipeprcg/pipeprcg.c

(ii) Other significant products.

1. T. Chen. *An Introduction to Modern Analysis of the Conjugate Gradient Algorithm in Exact and Finite Precision.* URL: https://chen.pw/research/cg/
2. T. Chen. "Non-asymptotic moment bounds for random variables rounded to non-uniformly spaced sets". In: *Stat* (2021), e395. DOI: 10.1002/STA4.395. arXiv: 2007.11041 [math.ST]
3. T. Chen. *Code accompanying: Analysis of stochastic Lanczos quadrature for spectrum approximation.* URL: https://github.com/chentyl/SLQ_analysis
4. T. Chen. *Code accompanying: Analysis of stochastic Lanczos quadrature for spectrum approximation.* URL: https://github.com/chentyl/lanczos_function_CIF
5. T. Chen. *Code accompanying: Predict-and-recompute conjugate gradient variants.* URL: https://github.com/tchen01/new_cg_variants/tree/master/predict_and_recompute

(D) SYNERGISTIC ACTIVITIES

1. **Minisymposium organizer.** Organize minisymposium titled "High performance Krylov subspace methods: Theory, Implementation, and Applications" at the SIAM Parallel Processing 2020 conference.
2. **Minisymposium organizer.** Co-organize (with Thomas Trogdon) minisymposium titled "Random matrices and numerical linear algebra" at the SIAM Linear Algebra 2021 conference.
3. **Graduate student representative.** Represent student interests to the department during the 2020-2021 academic year.
4. **Interdisciplinary pedagogy.** Participate in discussions on interdisciplinary pedagogy.
5. **Accessible and open science.** Maintain a webpage, `https://chen.pw/research`, which contains a range of material intended to make my research more accessible to a broader audience.