

NSF BIOGRAPHICAL SKETCH

NAME: Lathrop, James I.

POSITION TITLE & INSTITUTION: Assistant Professor, Iowa State University

(a) PROFESSIONAL PREPARATION

INSTITUTION	LOCATION	MAJOR / AREA OF STUDY	DEGREE (if applicable)	YEAR YYYY
California State University	Long Beach, CA	Electrical Engineering	BS	1983
University of California	Irvine, CA	Electrical and Computer Engineering	MS	1987
Iowa State University	Ames, IA	Computer Science	MS	1994
Iowa State University	Ames, IA	Computer Science	PHD	1997

(b) APPOINTMENTS

2017 - present Assistant Professor, Iowa State University, Ames, IA
2007 - 2017 Senior Lecturer, Iowa State University, Ames, IA
2003 - 2007 Lecturer, Iowa State University, Ames, IA
1999 - 2003 Director, Professional Services, NewMonics, Inc., Ames, IA
1998 - 1999 Manager, Professional Services, NewMonics, Inc, Ames, IA
1997 - 1998 Scientist, NewMonics, Inc., Ames, IA
1990 - 1994 Member Technical Staff Level II, Hughes Aircraft Company
1983 - 1989 Member Technical Staff Level I, Hughes Aircraft Company

(c) PRODUCTS

Products Most Closely Related to the Proposed Project

1. Klinge TH, Lathrop JI, Moreno S, Potter HD, Raman NK, Riley M. ALCH: An imperative language for chemical reaction network-controlled tile assembly. In: Geary C, Patitz M, editors. 26th International Conference on DNA Computing and Molecular Programming (DNA 26); 2020 September 15; Oxford, England. Schloss Dagstuhl--Leibniz-Zentrum für Informatik; c2020. Available from: <https://drops.dagstuhl.de/opus/volltexte/2020/12959/> DOI: 10.4230/LIPIcs.DNA.2020.6
2. Gerten MC, Lathrop JI, Cohen MB, Klinge T. ChemTest: An automated software testing framework for an emerging paradigm. In Proceedings of the 35th IEEE/ACM International Conference on Automated Software Engineering; 2020 September 21; Melbourne, Australia. IEEE; c2020. Available from: <https://conf.researchr.org/details/ase-2020/ase-2020-papers/83/ChemTest-An-Automated-Software-Testing-Framework-for-an-Emerging-Paradigm>
3. Klinge TH, Lathrop JI, Lutz J. Robust biomolecular finite automata. Theoretical Computer Science. 2020 May; 816:114–143. DOI: 10.1016/j.tcs.2020.01.008
4. Ellis SJ, Klinge TH, Lathrop JI. Robust chemical circuits. Biosystems. 2019 Dec;186:103983. PubMed PMID: [31207268](https://pubmed.ncbi.nlm.nih.gov/31207268/).

5. Lathrop JI, Lutz JH, Lutz RR, Potter HD, Riley M. population-induced phase transitions and the verification of chemical reaction networks. In: Geary C, Patitz M, editors. 26th International Conference on DNA Computing and Molecular Programming (DNA 26); 2020 September 15; Seattle, WA. Schloss Dagstuhl--Leibniz-Zentrum für Informatik; c2020. Available from: <https://drops.dagstuhl.de/opus/volltexte/2020/12958/> DOI: 10.4230/LIPIcs.DNA.2020.5

Other Significant Products, Whether or Not Related to the Proposed Project

1. Ellis SJ, Klinge TH, Lathrop JI, Lutz JH, Lutz RR, Miner AS, Potter H. Runtime fault detection in programmed molecular systems,. ACM Transactions on Software Engineering and Methodology. 2019 April; 28(2). Available from: <https://dl.acm.org/doi/10.1145/3295740> DOI: 10.1145/3295740
2. Huang X, Klinge TH, Lathrop JI, Li X, Lutz J. Real-time computability of real numbers by chemical reaction networks. Natural Computing. 2019 August 27; 18(1):63-73. DOI: 10.1007/s11047-018-9706-x
3. Ellis SJ, Lathrop JI, Lutz R. State logging in chemical reaction networks. Proceedings of the 4th ACM International Conference on Nanoscale Computing and Communication; 2017; Washington, DC. ACM; c2017. DOI: 10.1145/3109453.3109456
4. Huang X, Klinge TH, Lathrop J. Real-Time Equivalence of Chemical Reaction Networks and Analog Computers. In: Thachuk C, Liu Y, editors. DNA Computing and Molecular Programming. International Conference on DNA Computing and Molecular Programming; 2019 July 24; Seattle, WA. Springer; c2019. DOI: 10.1007/978-3-030-26807-7_3
5. Lathrop JI, Lutz JH, Patitz MJ, Summers S. Computability and complexity in self-assembly. Theory of Computing Systems. 2011; 48:617-647. DOI: 10.1007/978-3-540-69407-6_38

(d) SYNERGISTIC ACTIVITIES

1. Mentored 15 undergraduate students (individually and collaboratively with Titus Klinge) at Iowa State University, Grinnell College, and Carleton College with some collaborations resulting in conference publications or posters.
2. Developed (with Jack Lutz and Robyn Lutz at Iowa State University) an interdisciplinary research group in molecular programming, now the Iowa State University Laboratory for Molecular Programming
3. Developed (with PI Titus Klinge) molecular programming workshops for undergraduate students and faculty at Simpson College: "Simulating Self-assembly Systems" and "Workshop on Molecular Programming: Programming Matter to Do Our Bidding"
4. Co-developed (with Jack Lutz) course in nanoscale self-assembly and molecular programming
5. Mentored four undergraduate students at Simpson College in the Carver Bridge To STEM Success program