NSF BIOGRAPHICAL SKETCH

NAME: Klinge, Titus H.

POSITION TITLE & INSTITUTION: Assistant Professor, Drake University

(a) PROFESSIONAL PREPARATION

INSTITUTION	LOCATION	MAJOR / AREA OF STUDY	DEGREE (if applicable)	YEAR YYYY
Iowa State University	Ames, Iowa	Computer Science	BS	2011
Iowa State University	Ames, Iowa	Computer Science	PHD	2016

(b) APPOINTMENTS

2016 - present Assistant Professor, Drake University, Des Moines, IA
2018 - 2019 Visiting Assistant Professor, Carleton College, Northfield, MN
2016 - 2018 Visiting Assistant Professor, Grinnell College, Grinnell, IA

(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 fur 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, 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
5. 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; Seatle, WA. Springer; c2019. DOI: 10.1007/978-3-030-26807-7_3

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

1. Ellis SJ, Klinge TH, Lathrop JI. Robust chemical circuits. Biosystems. 2019 Dec;186:103983. PubMed PMID: 31207268.

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, Henderson ER, Klinge TH, Lathrop JI, Lutz JH, Lutz RR, Mathur D, Miner A. Automated requirements analysis for a molecular watchdog timer. ASE '14: Proceedings of the 29th ACM/IEEE international conference on Automated software engineering. 29th ACM/IEEE international conference on Automated software engineering; 2014 September; Vasteras, Sweden. ACM; c2014. DOI: 10.1145/2642937.2643007
4. Albright SD, Klinge TH, Rebelsky S. A Functional Approach to Data Science in CS1. Proceedings of the 49th ACM Technical Symposium on Computer Science Education. 49th ACM Technical Symposium on Computer Science Education; 2018; Baltimore, MD. ACM; c2018. DOI: 10.1145/3159450.3159550
5. Lutz RR, Lathrop JI, Klinge TH, Mathur D, Stull DM, Bergquist TG, Henderson E. Requirements analysis for a product family of DNA nanodevices. 20th IEEE International Requirements Engineering Conference (RE); 2012; Chicago, IL. c2012. DOI: 10.1109/RE.2012.6345806

(d) SYNERGISTIC ACTIVITIES

1. Developed an undergraduate course, Molecular Programming and Nanoscale Self-Assembly surveying the results of twelve prominent research papers on molecular programming over the last decade. The course was taught at both Grinnell College and Carleton College, and will be offered again at Drake University soon.

2. Developed (with PI James Lathrop) 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."

3. Mentored undergraduate and graduate students (individually and collaboratively with PI James Lathrop) at Grinnell College, Carleton College, and Iowa State University. These collaborations have resulted in publications and conference posters for both undergraduate and graduate students.

4. Received a competitive mentored advanced project (MAP) grant from Grinnell College to hire four undergraduate students over the summer of 2017 to develop tools for molecular programming.

5. The PI is an Affiliate Assistant Professor in the Computer Science department at Iowa State University and also belongs to the Laboratory for Molecular Programming (LAMP) to foster greater collaboration between an R1 institution and a primarily undergraduate institution (PUI).