Robert Zupko II

State College, Pennsylvania, United States
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Education

2019 **PhD in Computational Science and Engineering**
Michigan Technological University

2020 **MS in Environmental & Energy Policy**
Michigan Technological University

2014 **ALM in Information Technology**, concentration in Software Engineering
Harvard University

2008 **BS in Computer Science,** *Summa cum laude*
Rivier College (now Rivier University)

Professional Appointments

2022 - Present **Assistant Research Professor, Pennsylvania State University**
Boni Lab, Center for Infectious Disease Dynamics, Department of Biology

2019 - 20222 **Computational Scientist, Pennsylvania State University**
Boni Lab, Center for Infectious Disease Dynamics, Department of Biology

Peer Reviewed Publications

Journal articles

2022 **Zupko, R.**, Externalities as the Status Quo: Federal Application of Environmental Charges in the United States, *Environmental Policy and Governance*. ahead-of-print.

2022 **Zupko, R.J.**, Nguyen, T.D., Somé, A.F., Tran, T.N, Gerardin, J., Dudas, P., Giang, D.D.H., Wesolowski, A., Ouédraogo, J.B., Boni, M.F., Long-term effects of increased adoption of artemisinin combination therapies in Burkina Faso, *PLOS Global Public Health*, vol. 2(2), pp. e0000111, February 2022.

2021 **Zupko, R.**, Application of Agent-Based Modeling and Life Cycle Sustainability Assessment to Evaluate Biorefinery Placement, *Biomass and Bioenergy*, vol. 144, pp. 105916, January 2021.

2020 **Zupko, R.**, Forest Ownership Patterns in the Western Upper Peninsula of Michigan, USA, *Journal of Forestry*, vol. 118(5), pp. 466-473, September 2020.

2020 **Zupko, R.**, Kamath, D., Coscarelli, E., Rouleau, M., Minakata, D., Agent-Based Model to Predict the Fate of the Degradation of Organic Compounds in the Aqueous-Phase UV/H_2O_2 Advanced Oxidation Process, *Process Safety and Environmental Protection*, vol. 136, pp. 49-55, April 2020.

2019 **Zupko, R.**, Life Cycle Assessment of the Production of Gasoline and Diesel from Forest Residues Using Integrated Hydropyrolysis and Hydroconversion, *The International Journal of Life Cycle Assessment*, vol. 24(10), pp. 1793-1804, October 2019.

2019 Rouleau, M., **Zupko, R.**, Agent-Based Modeling for Bioenergy Policy Analysis and Sustainability Assessment, *Landscape and Urban Planning*, vol. 188, pp. 54-63, August 2019.

2019 **Zupko, R.**, Rouleau, M., ForestSim: Spatially Explicit Agent-Based Modeling of Non-Industrial Forest Owner Policies, *SoftwareX*, vol. 9, pp. 117-125, January 2019.

2007 **Zupko, R.J.**, Introduction to IEEE standard 802.16: wireless broadband access. *Rivier Academic Journal*, vol. 3(1), pp. 1-11, Spring 2007.

Conference Papers

2021 **Zupko, R.**, Nguyên, T., Boni, M., Simulating Human Movement in a National-Scale Individual-Based Model of Malaria in Burkina Faso, Social Simulation Conference 2021, Kraków, Poland (Online), September 20 - September 24, 2021.

2017 **Zupko, R.**, Fuzzy Decision Making in an Agent-Based Model of Non-Industrial Private Forest Owners, IEEE Symposium Series on Computational Intelligence, Honolulu, Hawai'i, November 27 - December 1, 2017.

Conference Proceedings

Abstracts

2022 **Zupko, R.**, Li, H., Nguyên, T., Tran, T., Tran, K., Boni, M., Contrasting Drug Policy Interventions to Delay the Fixation of 561H Artemisinin Resistant *Plasmodium falciparum* in Rwanda, American Society of Tropical Medicine and Hygiene Annual Meeting, Seattle, Washington, October 30 - November 3, 2022.

2022 **Zupko, R.**, Role of seasonal importation and multiclonal infections on the selection for antimalarial resistant genotypes of *Plasmodium falciparum* in high transmission settings, Malaria Modelers' Mini-Meeting, Bill & Melinda Gates Foundation, Seattle, Washington, October 29, 2022.

2021 **Zupko, R.**, Nguyên, T., Tran, T., Somé, F., Ouédraogo, J.B., Boni, M., Projected progression of antimalarial drug resistance in Burkina Faso using high resolution spatial modeling under drug policy and seasonal importation scenarios, Epidemics 8, Virtual Conference, November 30 - December 3, 2021.

2020 **Zupko, R.**, Tran, T., Nguyên, T., Somé, F., Ouédraogo, J.B., Boni, M., Projected Development of Antimalarial Drug Resistance in Burkina Faso Using High Resolution Spatial Modeling, American Society of Tropical Medicine and Hygiene Annual Meeting, Virtual Conference, November 15-19, 2020.

2019 **Zupko, R.**, Agent Based Life Cycle Sustainability Assessment to Assess Regional Potential for Second Generation Biofuel Development, International Workshop on Putting Sustainability into Convergence: Connecting Data, People, and Systems, Singapore, January 28 - 29, 2019.

2018 Minataka, D., Rouleau, M., **Zupko, R.**, Coscarelli, E., Experimental and Theoretical Investigations of the Fate of Organic Compounds Degradation in Advanced Oxidation Systems, International Water Association World Water Congress & Exhibition, Tokyo, Japan, September 16 - 21, 2018.

2018 **Zupko, R.**, Coscarelli, E., Rouleau, M., Minakata, D., Development of An Agent-based Model to Understand and Predict the Fate of Organic Compounds in Aqueous-phase Advanced Oxidation Processes, 256th ACS National Meeting & Exposition, Boston, Massachusetts, August 19 - 23, 2018.

2016 **Zupko, R.**, Ghimre, H., Nouhan, P., Rouleau, M., An Agent-based Model of Voluntary Incentive Programs for Sustainable Biofuel Development, Social Simulation Conference 2016, Rome, Italy, September 19 - 23, 2016.

2015 Arslanian, A., Bonner, D., Bugarinovic, I., Ford, M., Galushka, A., Liu, C. J., Martin, Z., O'Connor, F., Orcharton, A. A., Rodrigues, G. A., Sinnott, S. M., Stefanski, T. S., Valencia, J. A., Yaroshevsky, N. E., Zaman, S., **Zupko, R.**, Henstock, P. V., Toward an Open Source Suite to Bridge the Gap between Plate-Based Screening and Results, BioIT World: Conference & Expo '15, Boston, Massachusetts, April 21 - 23, 2015.

2014 **Zupko, R.**, Chouinard, D., Nichols, J., Polyanskyy, Y., Rabe, J., Rivituso, J., Bieber, C. Henstock, P. V., Lingolearn: Japanese Vocabulary Instruction and Assessment Software Utilizing Automatically Generated Kanji and Kana "Confusers", 28th JLTANE at Brown University, Providence, Rhode Island, June 7, 2014.

2012 Hodis, E., Watson, I., Theurillat, J., Zou, L., Place, C., Nickerson E., Auclair, D., Cibulskis, K., Sivachenko, A., Kryukov, G., Stransky, N., Ramos, A. H., Voet, D., Lawrence, M. S., Stojanov, P.,

Saksena, G., McKenna, A., Carter. S. L., Pugh, T., Noble, M., Lin, P., Lichtenstein, L., **Zupko, R.**, Sougnez, C., Guiducci, C., Onofrio, R.C., Ambrogio, L., Fennell, T., Chong, K., Winckler, W., Ardlie, K., Lander, E. S., Golub, T., Meyerson, M., Gabriel, S. B., Getz, G., Wagner, S., Schadendorf, D., Hoon, D. S. B., Chin, L., and Garraway, L. A., A glimpse into the somatic mutation landscape of melanoma through exome sequencing of 121 tumor-normal pairs [abstract]. In: Proceedings of the 103rd Annual Meeting of the American Association for Cancer Research; 2012 Mar 31-Apr 4; Chicago, Illinois. Philadelphia (PA): AACR; Cancer Res 2012;72(8 Suppl):Abstract nr 5056. doi:1538-7445.AM2012-5056

Posters

2022 **Zupko, R.J.**, Tran, T.N., Nguyen, T.D., Tran, K.T., Boni, M.F., Comparing the Development of Artemisinin Resistance in High and Low Prevalence Countries. Malaria: Confronting Challenges from Drug Discovery to Treatment, Breckenridge, Colorado, April 10 - 13, 2022.

2021 **Zupko, R.**, Tran, T., Nguyên, Boni, M., Seasonal Risk Associated with Fixation of Antimalarial Resistance Through Importation, American Society of Tropical Medicine and Hygiene Annual Meeting, National Harbor, Maryland, November 17 - 21, 2021.

2021 **Zupko, R.**, Tran, T., Nguyên, T., Somé, F., Ouédraogo, J.B., Boni, M., Projected Development of Antimalaria Drug Resistance in Burkina Faso Using High Resolution Spatial Modeling, 2021 MIDAS Network Annual Meeting, Virtual Conference, May 10-13, 2021.

2019 **Zupko, R.**, Rouleau, M., Incorporation of Agent-Based Modeling and Life Cycle Sustainability Assessment to Improve Assessment of Woody-Biomass Based Biofuels, Bioenergy Sustainability Conference, Nashville, Tennessee, October 21 - 22, 2019.

2017 Mayer, A., **Zupko, R.**, Rouleau, M., ForestSim: An ABM Simulation of Bioenergy Sustainability, Agent-Based Modeling (ABM) 17, San Diego, California, April 20-22, 2017.

2016 Rouleau, M., **Zupko, R.**, Ghimre, H., Nouhan, P., ForestSim: An Agent-Based Simulation for Bioenergy Sustainability Assessment, Social Simulation Conference 2016, Rome, Italy, September 19 - 23, 2016.

2016 Davis, C., Halaharvi, V., Mitchell, R., Rosenberg, C., Seing, M., Williams, R., **Zupko, R.**, Henstock, P., Accelerating Screening from Plates to Analysis Through a Flexible Web-Based Platform, BioIT World: Conference & Expo '16, Boston, Massachusetts, April 5-7, 2016

2016 Abhilash, S., Dube, S., Girija, T., Leinicke, S., Okongwu, C., Sanford, J., **Zupko, R.**, Zhang, T., Potier, Y., Neumeyer, S., Rotstein, S., Henstock, P., HELM Editor Project: An Open-Source, Web-Based Biomolecule Editor, BioIT World: Conference & Expo '16, Boston, Massachusetts, April 5-7, 2016.

2011 Voet, D., Lin, P., Lichtenstein, L., **Zupko, R.**, Saksena, G., Noble, M., Cibulskis, K., Gabriel, S., Lander, E., Chin, L., Getz, G., Firehose: An Analysis Infrastructure, The Cancer Genome Analysis First Annual Scientific Symposium, Washington, D.C., November 17 - 18, 2011.

Honors & Awards

2019 Dean's Award for Outstanding Scholarship, *Michigan Technological University*

2008, 2010 Catalyst Award, *Novartis Institutes for Biomedical Research*

2004 Surgeon General's Medical Information Systems Airman of the Year, *United States Air Force*

Grants

2019 Doctoral Finishing Fellowship (stipend + tuition), *Michigan Technological University*

2018 Student Research Grant, *Great Lakes Research Center*

Teaching

2018 **Graduate Teaching Instructor, Michigan Technological University**
U.S. Military History (Undergraduate)

2017 - 2018 **Graduate Teaching Assistant, Michigan Technological University**
U.S. Military History (Undergraduate)
Global Issues (Undergraduate)

2014 - 2016 **Teaching Assistant, Harvard Extension School**
Software Design: Principles, Models and Patterns (Graduate)
Software Engineering (Graduate Capstone)

Students Mentored / Supervised

2022 - Present Deborah Grace, Undergraduate Research Assistant
2020 - 2021 Haojun Li, Undergraduate Research Assistant (supervised by Maciej Boni), recognized with honorable mention, Undergraduate Research Award: Excellence in Information Literacy

Other Writing

Encyclopedia Entries

Forthcoming **Zupko, R.**, "Artificial Intelligence" in Anderson et al. (eds.). *Encyclopedia of Sustainability*, 2nd ed. Great Barrington, MA:Berkshire Publishing. *Forthcoming*.
Forthcoming **Zupko, R.**, "Disease, Infectious" in Anderson et al. (eds.). *Encyclopedia of Sustainability*, 2nd ed. Great Barrington, MA:Berkshire Publishing. *Forthcoming*.

Book reviews

2021 **Zupko, R.** [Review of *Global Algorithmic Capital Markets: High Frequency Trading, Dark Pools, and Regulatory Challenges*, by Walter Mattli (Ed.)]. *The Social Science Journal.* 59(2), 334–335.
2020 **Zupko, R.**, [Review of *Equilibrium Models in Economics: Purposes & Critical Limitations*, by L. A. Boland]. *The Social Science Journal*, 57(2), 262–263.
2019 **Zupko, R.**, [Review of *Complexity and Evolution: Toward a New Synthesis for Economics*, by D. S. Wilson & A. Kirman (Eds.)]. *The Social Science Journal*, 56(1), 141–142.

Other Talks

2022 "Drug Resistant Malaria: Current Status & Future Directions," The Millennium Café, Materials Research Institute, Pennsylvania State University, August 30, 2022.
2019 "Biofuels in the Western Upper Peninsula, a life cycle assessment of a proposed biorefinery in Ontonagon," Department of Social Sciences, Michigan Technological University, March 1, 2019.

Professional Experience

2017 - 2018 **Michigan Technological University**, Research Assistant (Ad Hoc)
2015 - 2018 **Xeratec**, Senior Software Developer
2014 - 2015 **Essen BioScience** (acquired by Sartorius), Senior Software Engineer
2014 **University of Michigan**, Senior Applications Programmer/Analyst
2012 - 2014 **Permabit** (acquired by Red Hat), Software Engineer

2013 **Protivent**, Software Developer (Contract)
2011 - 2012 **Scholastic**, Senior Release Engineer (Contract)
2011 **Broad Institute**, Software Engineer
2007 - 2011 **Novartis Institutes for Biomedical Research**, Software Systems Analyst Specialist
2006 - 2007 **Terminal Velocity FM**, Software Engineer
2002 - 2006 **Air Force Institutes for Operational Health, United States Air Force**, Staff Sergeant / Computer Programmer

Professional Development

2022 GCert in Remote Sensing and Earth Observation
Pennsylvania State University
2021 PostBac Cert in Geographic Information Systems
Pennsylvania State University
2017 GCert in Sustainability
Michigan Technological University

Professional Memberships

2015 - present **IEEE**, Senior Member

Review Activities

2020 - present 50+ reviews for 10+ journals, comprehensive listing on Web of Science:
https://www.webofscience.com/wos/author/record/AAI-9778-2021