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Christopher J. Urban

Academic Appointments

2024– **Assistant Professor**, *Department of Psychology*, University of Rhode Island.

2023–2024 **Instructor**, *Department of Psychology*, University of Rhode Island.

Education

2024 **Ph.D.**, *Quantitative Psychology*, University of North Carolina at Chapel Hill.
Minor in Statistics and Operations Research
Dissertation Title: *Modeling intensively measured, longitudinal, and multidimensional item responses: Capturing continuous-time latent change processes via neural stochastic differential equations*

2021 **M.A.**, *Quantitative Psychology*, University of North Carolina at Chapel Hill.
Thesis Title: *Machine learning-based estimation and goodness-of-fit for large-scale confirmatory item factor analysis*

2016 **B.S.**, *Psychology*, Stony Brook University.
Minor in Mathematics; Concentrations in Mathematics and Physics

2011 **A.A.**, *Humanities and Social Sciences*, Onondaga Community College.

Publications

Refereed Publications

Plumley, R. D., Bernacki, M. L., Greene, J. A., Kuhlmann, S., Raković, M., **Urban, C. J.**, . . . Gates, K. M. (2024). Co-designing enduring learning analytics prediction and support tools in undergraduate biology courses. *British Journal of Educational Technology*. *55* (5), 1860–1883.

Kilian, P., Leyhr, D., **Urban, C.J.**, Höner, O. P., & Kelava, A. (2023). A deep learning factor analysis model based on importance-weighted variational inference and normalizing flow priors: Evaluation within a set of multidimensional performance assessments in youth elite soccer players. *Statistical Analysis and Data Mining: The ASA Data Science Journal*. 1–14.

Arizmendi, C. J., Bernacki, M. L., Rakovic, M., Plumley, R. D., **Urban, C.J.**, Panter, A. T., . . . Gates, K. M. (2022). Predicting student outcomes using internet logs of learning behaviors: Review, current standards, and suggestions for future work. *Multivariate Behavioral Research*.

Urban, C. J. & Bauer, D. J. (2021). A deep learning algorithm for high-dimensional exploratory item factor analysis. *Psychometrika*. *86* (1), 1–29.

Urban, C. J. & Gates, K. M. (2021). Deep learning: A primer for psychologists. *Psychological Methods*. *26* (6), 743–773.

Greene, J. A., Plumley, R. D., **Urban, C. J.**, Bernacki, M. L., Gates, K. M., Hogan, K. A., Demetriou, C., & Panter, A. T. (2019). Modeling temporal self-regulatory processing in a higher education biology course. *Learning and Instruction*.

Book Chapters

Arizmendi, C. J., **Urban, C. J.** & Gates, K. M. (2024). Deep learning methods for mobile sensing. In Mehl, M. R., Eid, M., Wrzus, C., Harari, G. M., & Ebner-Priemer, U. W. (Eds.), *Mobile Sensing in Psychology: Methods and Applications* (pp. 432–455). Guilford Press.

Eaton, N. R. & **Urban, C. J.** (2018). Parental monitoring. In *Encyclopedia of Adolescence* (2nd ed., pp. 2666–2679). Springer.

In Preparation

Urban, C.J. & Bauer, D. J. (in preparation). Modeling intensively measured, longitudinal, and high-dimensional behavioral data: Capturing continuous-time latent change processes via neural stochastic differential equations.

Urban, C.J. (in preparation). High-dimensional item factor analysis with estimation of the latent population distribution via normalizing flows.

Urban, C.J. & Bauer, D. J. (in preparation). Deep learning-based estimation and goodness-of-fit for large-scale confirmatory item factor analysis.

Teaching

Courses

Fall 2024 — **PSY 612: Structural Equation Modeling**.
Instructor of Record
Department of Psychology, University of Rhode Island

Fall 2023, Spring/Fall 2024 — **PSY 200: Quantitative Methods in Psychology**.
Instructor of Record
Department of Psychology, University of Rhode Island

Fall 2017 — **PSYC 210: Statistical Principles in Psychological Research**.
Teaching Assistant
Department of Psychology and Neuroscience, University of North Carolina at Chapel Hill

Workshops

October 2022 — **Foundations of Deep Learning for the Social Sciences Workshop**.
Instructor of Record
The Methods Center at the Faculty of Economics and Social Sciences, University of Tübingen

Invited Talks

Urban, C. J. (2024, April). *A deep learning approach to modeling intensively measured, longitudinal, and multidimensional item responses*. Talk given at the Quantitative Psychology Colloquium Series in the Department of Psychology at the Ohio State University, Columbus, OH.

Urban, C. J. (2024, April). *Progress and problems in deep learning-based latent variable modeling*. Talk given at the Quantitative Psychology Colloquium Series in the Department of Psychology at the Ohio State University, Columbus, OH.

Urban, C. J. (2024, April). *New methods for explanation and prediction with intensive longitudinal data*. Talk given at the Behavioral Science Brown Bag Series in the Department of Psychology at University of Rhode Island, Kingston, RI.

Urban, C. J. (2023, February). *Deep learning and psychometrics: A fruitful new synthesis*. Virtual talk given at the Quantitative Psychology Brown Bag in the School of Psychology at Georgia Institute of Technology, Atlanta, GA.

Urban, C. J. (2021, October). *Deep learning and psychometrics: A fruitful new synthesis*. Virtual talk given at the Methods Center in the Faculty of Economics and Social Sciences at University of Tübingen, Tübingen, Germany.

Urban, C. J. (2021, October). *Deep learning and psychometrics: A fruitful new synthesis*. Virtual talk given at the QuantDev Brown Bag in the College of Health and Human Development at The Pennsylvania State University, University Park, PA.

Urban, C. J. (2021, September). *Deep learning and psychometrics: A fruitful new synthesis*. Virtual talk given at the Quantitative Methods Colloquium Series in the Department of Psychology and Human Development at Vanderbilt University, Nashville, TN.

Conference Papers and Presentations

Urban, C. J., & Bauer, D. J. (2023, October). *Modeling intensively measured, longitudinal, and multidimensional item responses: Capturing continuous-time latent change processes via neural stochastic differential equations*. Poster presented at the annual meeting of the Society of Multivariate Experimental Psychology, Iowa City, IA.

Bernacki, M. L., **Urban, C. J.**, Plumley, R., Luo, L., Gates, K., Panter, A., & Greene, J. A. (2020, April). *Leveraging campus data, learning theory, and educational data mining to predict achievement before students begin to fail*. Poster presented at the annual meeting of the American Educational Research Association, San Francisco, CA. (Conference cancelled)

Urban, C. J., Fisher, Z. F., Parsons, J., Girault, J. B., Hopfinger, J. B., & Gates, K. M. (2019, April). *Classifying individuals based on within-network connectivity*. Poster presented at the BRAIN Initiative Investigator's Meeting, Washington, DC.

Girault, J. B., Arizmendi, C., Fisher, Z. F., **Urban, C. J.**, Piven, J., & Gates, K. M. (2019, April). *Identifying age-related functional connectivity features across different levels of spatial resolution: An application of multi-scale GIMME*. Poster presented at the BRAIN Initiative Investigator's Meeting, Washington, DC.

Greene, J. A., **Urban, C. J.**, Plumley, R. D., Bernacki, M. L., Gates, K. M., Hogan, K. A., Demetriou, C., & Panter, A. T. (2019, April). *Theory-driven data mining to understand self-regulated learning processing in a higher education biology course*. Paper presented at the annual meeting of the American Educational Research Association, Toronto, Canada.

Urban, C. J., Bernacki, M. L., Plumley, R. D., Gates, K. M., Demetriou, C., Panter, A. T., Hogan, K. A., & Greene, J. A. (2018, May). *A supervised data mining approach for identifying behavior sequences related to academic performance*. Poster presented at the Modern Modeling Methods Conference, Storrs, CT.

Taggart, T. C., **Urban, C. J.**, Reisner, S. L., & Eaton, N. R. (2015, November). *Correlates of sexual attraction and behavior with transgender individuals*. Poster presented at the annual meeting of the Society for the Scientific Study of Sexuality, Albuquerque, NM.

Funding

2019–2022 **National Science Foundation Graduate Research Fellowship; $138,000**

Computer Software

Urban, C. J. & He, S. (2022). DeepIRTools: Deep learning-based estimation and inference for large-scale item response theory. Python package. `https://github.com/cjurban/deepirtools`

Reviewing

2022 **Psychometrika**.

2022 **Multivariate Behavioral Research**.

2020–2021 **British Journal of Mathematical and Statistical Psychology**.

2021 **Journal of Social and Personal Relationships**.

Awards & Honors

October 2023 **Society of Multivariate Experimental Psychology Conference Travel Award; $2,000**

April 2019 **Trainee Travel Award, BRAIN Initiative Investigator's Meeting; $1,000**

May 2018 **Society of Multivariate Experimental Psychology Workshop Travel Award; $1,000**

May 2018 **Dashiell Student Travel Award; $800**