

# Bowen Yang

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## EDUCATION

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- **University of Nebraska–Lincoln** Lincoln, NE  
*Doctor of Philosophy in Civil Engineering; GPA: 3.98/4.00*  
*Advisor: Joshua Steelman, PhD, PE*  
*Expected Aug 2023*
- **Pennsylvania State University Park** State College, PA  
*Master of Science in Civil Engineering; GPA: 3.54/4.00*  
*Advisor: Jeffrey Laman, PhD, PE*  
*May 2018*

## PROGRAMMING SKILLS

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- **Languages:** Python, JavaScript, MATLAB, HTML, CSS, Java, R, C, C++
- **Technologies:** Machine Learning, Web Development, Mathcad, Microsoft Word, Excel

## RELEVANT COURSEWORK

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- **Artificial Intelligence:** Practical Machine Learning
- **Programming:** C Language Programming, Fortran Language Programming
- **Mathematics:** Advanced Mathematics, Linear Algebra, Probability and Statistics, Statistical Methods in Research
- **Analysis:** Structural Analysis, Structural Analysis by Matrix, Computational Problem Solving in Civil Engineering
- **Certificates:** Data Structures and Algorithms Course in Python, JavaScript Algorithms and Data Structures, (New) Responsive Web Design, Operating Systems, Discrete Mathematics Generality, International Teaching Assistants, Fundamentals of Engineering

## RESEARCH EXPERIENCE

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- **University of Nebraska-Lincoln** Lincoln, NE  
*Doctoral Dissertation; Truck Platoon Performance Evaluation for Girder Bridges* May 2022 - Present
  - Provide safe platoon headway guidance using Artificial Neural Networks based on truck platoon type, vehicle weight, bridge type, bridge length, and bridge service life
  - Apply the Naive Bayes Classifier to available load test data to reevaluate bridge service III design requirements
  - Develop analytical algorithms in MATLAB for evaluating nonlinear behavior of prestressed concrete girders subjected to arbitrary cyclic loadings
- **University of Nebraska-Lincoln** Lincoln, NE  
*Research Assistant; Truck Platoon Effects on Girder Bridges Phase II* Aug 2021 - Present
  - Develop operational strategies for truck platoons on the bridge Service limit states using MATLAB based on available statistical parameters
  - Formulate equations to calculate truck platoon Coefficients of Variation (CoV), considering truck weight, dynamic effects, and girder distributions
- **University of Nebraska-Lincoln** Lincoln, NE  
*Research Assistant; Outdoor Laboratory and Testbed for Bridge Health* Aug 2021 - May 2022
  - Cooperated with an industry company to conduct 120 diagnostic load tests on three out-of-service bridges
  - Analyzed and visualized recorded sensor data to determine bridge dynamic effects using MATLAB Signal Analyzer
  - Created 2D and 3D numerical finite element bridge models to verify the obtained sensor data
- **University of Nebraska-Lincoln** Lincoln, NE  
*Research Assistant; Truck Platoon Effects on Girder Bridges Phase I* Aug 2019 - Jan 2022
  - Implemented MATLAB codes for calculating maximum truck platoon effects on one- and two- span girder bridges
  - Conducted the reliability analysis by using Monte Carlo Simulation (MCS) for truck platoons on girder bridges
  - Calibrated live load factors for platoon trucks with varying weights and CoVs using MATLAB

## TEACHING AND MENTORING EXPERIENCE

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- **University of Nebraska-Lincoln** Lincoln, NE  
*Teaching Assistant for CIVE 441 - Steel Design I* Jan 2021 - Present
  - Provide project solutions in Mathcad with narrative descriptions of the engineering concepts underlying them
  - Serve as a supporting instructor and answer student questions on an as-needed basis during regularly scheduled office hours (2 hours/week) or through email
- **University of Nebraska-Lincoln** Lincoln, NE  
*Student Research Mentor for National Science Foundation Program* Summers 2021 - 2022
  - Created MATLAB codes to assist students in analyzing rural steel bridges subjected to emergency vehicles
  - Assisted undergraduate students in developing their summer research reports and posters

## COURSE PROJECTS

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- **University of Nebraska-Lincoln** Lincoln, NE  
*ENGR 891 - Practical Machine Learning* Jan 2021 - May 2021
  - Solved supervised machine learning problems involving structured and unstructured data using python packages such as **numpy**, **pandas**, **seaborn**, **matplotlib**, **sklearn**, **keras** and **tensorflow**
- **University of Nebraska-Lincoln** Lincoln, NE  
*CIVE 881 - Computational Problem Solving in Civil Engineering* Aug 2019 - Dec 2019
  - Utilized MATLAB codes to solve ordinary differential equations and implement numerical methods
  - Applied numerical methods (such as Euler's Forward Method and Centered Difference Method) to predict the displacement of a one-story building

## VOLUNTEER

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- **University of Nebraska-Lincoln** Lincoln, NE  
*Graduate Volunteer* June 2021
  - Interacted with undergraduate students about the application process for graduate school
  - Led pre-prepared session for undergraduate students from other universities on "Applying to Grad School and Funding" offered by the Office of Graduate Studies

## PUBLICATIONS AND TECHNICAL REPORTS

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- **Yang, B.**, Steelman, J. S., Puckett, J. A., & Linzell, D. G. (2023). A Reliability-Based Service III Operational Evaluation for Prestressed Girder Bridges Under Platoon Loads. Transportation Research Record: Journal of Transportation Research Board (under review)
- Wood, R. L., Nasimi, M., **Yang, B.**, Wittich, C. E., Steelman, J. S., Puckett, J. A., ... & Mohammadi, M. E. (2022). Outdoor Laboratory and Testbed for Bridge Health (No. M107)
- **Yang, B.**, Steelman, J. S., Puckett, J. A., & Linzell, D. G. (2021). Safe Platooning Headways on Girder Bridges. Transportation Research Record: Journal of Transportation Research Board
- Steelman, J. S., Puckett, J. A., Linzell, D. G., & **Yang, B.** (2021). Truck Platooning Effects on Girder Bridges (No. SPR-1 (20) M030)

## CONFERENCE PAPERS AND PRESENTATIONS

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- **Yang, B.**, Steelman, J. S., Puckett, J. A., & Linzell, D. G. (2023). A Reliability-Based Service III Operational Evaluation for Prestressed Girder Bridges Under Platoon Loads. Transportation Research Board Conference (accepted)
- **Yang, B.**, Steelman, J. S., Puckett, J. A., & Linzell, D. G. (2023). A Reliability-based Evaluation of Truck Platoon-loaded Steel Bridges for Strength and Service. TRB AKB20 Committee Nugget Meeting (selected)
- **Yang, B.**, Steelman, J. S., Puckett, J. A., & Linzell, D. G. (2021). Safe Platooning Headways on Girder Bridges. International Bridge Conference

## HONORS AND AWARDS

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- John W. Hossack Engineering Fund Scholarship, UNL Accepted July 2022
- Robert A. and Becky Reisdorff Student Support Fellowship, UNL Accepted Aug 2021
- Milton E. Mohr Fellowship, UNL Accepted May 2021
- Member of Chi Epsilon Chapter, UNL Oct 2020 - Present
- Robert A. and Becky Reisdorff Student Support Fellowship, UNL Accepted Aug 2020