Bowen Yang

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Education

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

Programming Skills

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

Relevant Coursework

- **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
- **Online Certificates**: JavaScript Algorithms and Data Structures, (New) Responsive Web Design, Operating Systems, Discrete Mathematics Generality

Research Experience

- **University of Nebraska-Lincoln** — Lincoln, NE
  Doctoral Dissertation; Truck Platoon Performance Evaluation for Girder Bridges — *May 2022 - Present*
  - Develop analytical numerical frameworks for the evaluation of monotonic and arbitrary cyclic loading and unloading of prestressed concrete girder bridges
  - Utilize MATLAB to perform a nonlinear analysis of prestressed concrete girder response due to cyclic loadings
  - Provide the number of stress cycles per truck platoon with varying headways, number of trucks, gross weights, and types of vehicles
- **University of Nebraska-Lincoln** — Lincoln, NE
  Research Assistant; Truck Platoon Effects on Girder Bridges Phase II — *Aug 2021 - Present*
  - Calibrate live load factors for truck platoons at the Service limit states to calculate bridge load ratings
  - Formulate an equation to calculate truck platoon Coefficients of Variation (CoV), considering truck weight, dynamic effects, and girder distributions
  - Develop operational strategies for truck platoons on the bridge Service limit states using MATLAB based on available statistical parameters
- **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 transducer data and visualized it using MATLAB to determine dynamic effects and girder distributions
  - Created 2D and 3D finite element bridge models to verify the obtained transducer 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 reliability analysis by using Monte Carlo Simulation (MCS) for truck platoons on girder bridges
  - Established safe headway guidance for platoon trucks with varying weights and CoVs to maintain the required bridge safety index

Teaching and Mentoring Experience

- **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
  - Simulated steel bridge interface shear forces based on available statistical parameters using MATLAB
  - Assisted undergraduate students in developing their summer research posters

Course Projects

- **University of Nebraska-Lincoln** Lincoln, NE
  ENGR 891 - Practical Machine Learning *Jan 2021 - May 2021*
  - Applied machine learning technologies (KNN, Linear Regression, Logistic Regression, SVM, MLP and DT) to unstandardized/standardized and biased/unbiased data using Python packages such as **numpy**, **pandas**, **seaborn**, **matplotlib**, **sklearn**, 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

Publications and Technical Reports

- 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 Paper and Presentation

- **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

- 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*