BRYAM XAVIER ASTUDILLO CARPIO

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EDUCATION

STANFORD UNIVERSITY

PhD in Civil Engineering (Structural Engineering)　　　　　　　　2022-2025

　　　Research Project: *Analysis and Design of Strongback frames.*
　　　Advisor: Barbara Simpson, PhD.

OREGON STATE UNIVERSITY

MS in Civil Engineering (Structural Engineering)　| GPA: 3.96　　2020-2022

　　　Research Project: *Frame-Spine System with Force-Limiting Connections for Low-Damage Seismic Resilient Buildings*. US-Japan Collaborative Research.

　　　Thesis: Numerical Characterization and Modeling Uncertainty of Frame-Spine and Frame-Spine-FLC Full-Scale Specimens Tested at E-Defense Shake-Table
　　　Advisor: Barbara Simpson, PhD.

　　　Relevant Coursework: Seismic Design, Seismic Design of Steel Structures, Structural Dynamics, Nonlinear Structural Analysis, Structural Reliability & Risk Analysis.

UNIVERSIDAD DE CUENCA - ECUADOR

Bachelor in Civil Engineering　　　　　　　　　　　　　　　2013 - 2018

　　　Thesis: Modeling and performance analysis of a steel structure, considering deterioration for collapse assessment.
　　　Advisor: Francisco Flores, PhD

Vanguardia Honors Program　　　　　　　　　　　　　　　　2016 - 2018

　　　The Vanguardia Program is an Honors Program from Universidad de Cuenca for students with outstanding academic performance and interest in a research career.

UNIVERSIDAD DEL AZUAY - ECUADOR

Credits towards Computer Science　　　　　　　　　　　　　　2012 - 2013

MERITS AND AWARDS

Main merits and awards.

- FULBRIGHT Scholarship for Foreign Students to pursue graduate studies in the US.　　2020 – 2022
- Student member at University of Cuenca HONORS PROGRAM.　　2016 – 2018

Other merits and awards.

- EERI Registration Grant. 12th National Conference on Earthquake Engineering.　　2022
- EERI Registration Grant. EERI Annual meeting.　　2021
- SEI Student Scholarship to participate at Structures Congress 2019. American Society of Civil Engineers - Structural Engineering Institute.　　2019

- 1st Place at Matrix Analysis of Structures Contest   2017
- Merit based Scholarship for high academic performance in Civil Engineering   2015 – 2017
  (3 years in a row) – Universidad de Cuenca
- Merit based Scholarship for top ranked student in computer science –   2013
  Universidad del Azuay

PROFESSIONAL EXPERIENCE

TIPPING STRUCTURAL ENGINEERS. BERKELEY, CA.

Structural Engineering Intern   Summer 2021
- Design and analysis of 4-, 8-, and 16-stories archetypes for BRBF and Mast frames

OREGON STATE UNIVERSITY. CORVALLIS, OR.

Graduate Research Assistant   2020 - 2022
Research Project: Frame-Spine System with Force-Limiting Connections for Low-Damage Seismic Resilient Buildings. US-Japan Collaborative Research.
- Full-scale shake table experiment of a hospital building at the E-Defense facility in Japan
- Numerical predictions using nonlinear dynamic analysis
- Data processing from instrumentation in the building

UNIVERSIDAD DE CUENCA. ECUADOR

Research Engineer   2018 - 2020
Projects: Evaluation of floor accelerations on non-structural components, accidental torsion on structures, influence of modeling base column connections.
- Optimized the modeling process for structures using OpenSees in 2D and 3D
- Developed tools for parallel analysis in a supercomputer
- Performed nonlinear static and dynamic analysis with state-of-the-art techniques
- Simplified the postprocessing operations for results from static and dynamic analysis

Undergraduate Teacher Assistant   2014 - 2017
Courses: Differential Calculus (4 semesters) and Linear Algebra (2 semesters)

UNIVERSIDAD DEL AZUAY. ECUADOR

Research Engineer   2019 - 2020
Project: Influence of gravity column connections on the performance of buildings.
- Develop mathematical models varying shear-tab hysteretic behavior
- Execute series of analysis to quantify the effects of shear-tab behavior on the overall performance.
- Post process results to quantify energy dissipation of connections.
- Participate in seminars to motivate new students to participate in research activities

Instructor   2018
Courses: MATLAB programming for structural engineering analysis

PUBLICATIONS

Journal publications

Astudillo, B., Rivera, D., Simpson, B., Fahnestock, L., Sause, R., Ricles, J., Kurata, M.,   2022
Okazaki, T., Kawamata, Y., Tao, Z., Duke, J., Qie, Y., 2022. Modeling Uncertainty of

Specimens Employing Spines and Force-Limiting Connections Tested at E-Defense Shaking table. *Manuscript in preparation.*

Astudillo, B., Rivera, D., Simpson, B., Fahnestock, L., Sause, R., Ricles, J., Kurata, M., Okazaki, T., Kawamata, Y., Tao, Z., Duke, J., Qie, Y., 2022. Numerical Characterization of Full-Scale Specimens that Represent Lateral-Force-Resisting Systems Containing Spines and Force-Limiting-Connections. *Manuscript in preparation.* — 2022

Torres-Rodas, P., Flores, F., Pozo, S., & **Astudillo**, B. X. (2021). Seismic performance of steel moment frames considering the effects of column-base hysteretic behavior and gravity framing system. Soil Dynamics and Earthquake Engineering, 144, 106654. https://doi.org/10.1016/j.soildyn.2021.106654 — 2021

Pozo, S., **Astudillo, B**., Samaniego, E., Flores, F. (2021). Objective Phenomenological Constitutive Law for Collapse Analyses in Distributed Plasticity Steel-Frame Models. J. Struct. Eng. 147, 04021057. https://doi.org/10.1061/(ASCE)ST.1943-541X.0003027 — 2021

Flores, F. X., **Astudillo**, B. X., & Pozo, S. (2021). Effective Modeling of Special Steel Moment Frames for the Evaluation of Seismically Induced Floor Accelerations. Journal of Structural Engineering, 147(1), 04020311. https://doi.org/10.1061/(ASCE)ST.1943-541X.0002851 — 2021

Conference proceedings

Astudillo, B., Rivera, D., Simpson, B., Fahnestock, L., Sause, R., Ricles, J., Kurata, M., Okazaki, T., Kawamata, Y., Tao, Z., Duke, J., Qie, Y., 2022. Numerical response estimations of a Frame-Spine-FLC system prior to experimental dynamic testing. *The 10th International Conference on the Behaviour Of Steel Structures In Seismic Areas*, Timisoara, Romania, 25-27 May 2022 — 2022

Astudillo, B., Panian, L., Simpson, B. Design and Performance Comparison of Strongback Systems and Typical Chevron BRB Frames. *Proceedings of the 12th National Conference in Earthquake Engineering*, Earthquake Engineering Research Institute, Salt Lake City, UT. 2022. — 2022

Fahnestock, L., Sause, R., Ricles, J., Simpson, B., Kurata, M., Okazaki, T., Kawamata, Y., Tao, Z., Duke, J., Rivera, D., **Astudillo, B**., Qie, Y. (2021). U.S.-Japan collaboration for shake table testing of a Frame-Spine system with Force-Limiting Connections. 17th WCEE World Conference on Earthquake Engineering: Sendai, Japan 2021. — 2021

Fahnestock, L., Sause, R., Ricles, J., Simpson, B., Kurata, M., Okazaki, T., Kawamata, Y., Tao, Z., Duke, J., Rivera, D., **Astudillo, B**., Qie, Y. (2021). Full-Scale Seismic Stability Evaluation of a Frame-Spine System with Force-Limiting Connections. Proceedings of the Annual Stability Conference Structural Stability Research Council. Louisville, Kentucky. — 2021

Astudillo B., Simpson B. (2021). Preliminary numerical analysis prior to a shake-table test of a Moment Resisting Frame with strongback columns and force limiting connections. EERI Annual Meeting. Poster Presentation. — 2021

Astudillo, B., Flores, F., Pozo, S., Charney, F., 2020a. An Evaluation Of The Current Approaches And Recommendations For More Rational Approaches For Assessing The Seismic Torsional Stability Of Buildings. Presented at the XI International Conference on Structural Dynamics, Athens, Greece, pp. 4590–4600. https://doi.org/10.47964/1120.9373.19605 — 2020

Astudillo, B., Pozo, S., Flores, F., 2020b. Parametric Analysis And Comparison Of Models Used In The Analysis Of Steel Structures. Presented at the XI International Conference on — 2020

Structural Dynamics, Athens, Greece, pp. 3655–3670. https://doi.org/10.47964/1120.9300.19718

Flores, F., Pozo, S., **Astudillo, B**., Vazquez, J., 2020. Gravity System Energy Dissipation Contribution In Seismic Performance Of Special Steel Moment Frames. Presented at the XI International Conference on Structural Dynamics, Athens, Greece, pp. 4023–4038. https://doi.org/10.47964/1120.9329.19506   2020

Pozo, S., **Astudillo, B**., Samaniego, E., Flores, F., 2020. Regularization Method To Include Material Softening In Fiber Beam-Column Elements For Seismic Performance Assessment Of Steel Frames. Presented at the XI International Conference on Structural Dynamics, Athens, Greece, pp. 93–107. https://doi.org/10.47964/1120.9008.19587   2020

Torres-Rodas, P., Flores, F., **Astudillo, B**., Pozo, S., 2020. Sensitivity Of Special Steel Moment Frames To The Influence Of Column-Base Hysteretic Behavior Including Gravity Framing System. Presented at the XI International Conference on Structural Dynamics, Athens, Greece, pp. 3629–3642. https://doi.org/10.47964/1120.9298.19279   2020

Flores F., **Astudillo, B**.X., Barrera, D.V., Jerves, R.A., Martinez, I.L., Pozo, S.P., (2019). Level of Detail Required to Model Special Steel Moment Frames to Evaluate Floor Accelerations in Nonstructural Components, in: Structures Congress 2019. pp. 426–437. https://doi.org/10.1061/9780784482230.040   2019

Flores, F., Charney, F., Pozo, S., & **Astudillo**, B. (2018, June). Structural behavior checks prior performing nonlinear dynamic analysis. In Proceedings of the 11th US National Conference on Earthquake Engineering (11NCEE). Los Angeles, CA.   2018

Thesis

Astudillo, B., 2022. Numerical Characterization and Modeling Uncertainty of Frame-Spine and Frame-Spine-FLC Full-Scale Specimens Tested at E-Defense Shake-Table. Master thesis. Oregon State University, Corvallis, OR.   2022

Astudillo, B. (2018). Modelling and Performance Analysis of a Steel Structure, considering deteriorations for collapse prediction. Undergraduate Thesis, Universidad de Cuenca.   2018

AFILIATIONS AND MEMBERSHIPS

PEER Student Committee. Student board member	2021-present
EERI Student Membership	2018-present
ASCE Student Membership	2018-present
Member of the student executive committee at Universidad de Cuenca.	2016-2017

ADDITIONAL SKILLS

- Languages: Native Spanish; fluent in written and spoken English.
- High level of computer knowledge: MATLAB, tcl, Python, Visual Basic Applications (VBA), AutoCAD, Fortran, ArcGIS.
- Structural Engineering Software Packages: OpenSees, SAP2000, ETABS, Perform3D.