Ricardo O. Jacome

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EDUCATION

University of Nebraska – Lincoln   Estimated Graduation Date: May 2021
- Doctor of Philosophy Ph.D. in Mechanical Engineering and Applied Mechanics (3.94 GPA)
  - Specialization in Dynamics & Vibrations
  - Secondary Area of Study: Systems, Design and Controls
- Dissertation: "On Road Coordinates for Autonomous Vehicle Guidance", *Advisor Dr. Cody Stolle.*

University of Texas – Rio Grande Valley   May 2017
- Bachelor of Science in Mechanical Engineering (3.98 GPA)
  - Minor in Business Administration (4.00 GPA)

WORK/RESEARCH EXPERIENCE

Graduate Research Assistant   *University of Nebraska – Lincoln*   2017-Present

- Lead researcher in autonomous vehicle research in trajectory generation, geometric road representation, and vehicle dynamics.
  - Collaborated closely with students and professors from multi-disciplinary engineering areas.
  - Simulation and testing for vehicle stability performance and analysis.
- In charge of developing test plans for vehicle-dynamic performance and stability evaluations.
- Data analyst for Midwest Roadside Safety Facility involved in Finite Element Analysis simulations for crash testing analysis.
  - Coordinated with construction crews and design teams for development and testing of barrier systems
- Experience with instrumentation on high-speed data acquisition systems, high-precision localization, filtering techniques, and sensor data analysis (accelerometers, rate transducers) for both car-crash worthiness evaluations and vehicle-dynamic performance.
- Familiarity with current standards and procedures for car crashes, and friction bed tests in accordance with SAE J211-1, J299, and J874.
- Graduate student leader in charge of managing and organizing student teams (~20) for crash documentation and analysis.
- Prepared technical reports on testing and data analysis.
  - Prepared and presented technical presentations on multiple research topics.
- Material testing experience for characterization and strength measurements.
- Acted as student liaison to the department administration to implement methodology that had the potential to increase the department's efficiency.

Teaching Assistant   *University of Nebraska – Lincoln*   2020-2021

- Grader for undergraduate dynamics engineering class of ~80. Explained concepts to students and graded homework assignments.
- Provided students with guidance, tutoring, and mentorship for success in their classes.
- Developed teaching lesson plans.

Teaching Assistant   *University of Texas – Rio Grande Valley*   2015-2017

- Mentor in an engineering class of ~120 undergraduate students. Explained concepts to students and graded lab reports. Class topics covered were Linear Algebra, Probability, Statistics and Vector Calculus.

Science Tutor   *University of Texas – Rio Grande Valley*   2014-2017

- CRLA Level 2 Certified. Tutored students in the areas of Chemistry, Physics, Math and Engineering. Certified to train entering level tutors into the customer service environment.

UTCRS Internship   *Mid-America Transportation Center*   Summer 2015

- Position focused development of dynamic simulations on Adams MSC software for slopes at railway intersections. Created cost-benefit analysis into the deletion of these slopes for the railway industries.

ASSOCIATIONS

- Tau Beta Pi, Member (2016-Present)
- Hispanic Scholarship Fund Scholar (2018-Present)
- Society of Automotive Engineers (2018-Present)
- Society for Industrial and Applied Mathematics (2019 – Present)
- The Vibrations Institute (2019-Present)

SOFTWARE PROFIENCY

- *Microsoft Software*: Word, PowerPoint, Excel
- *Design/Simulation Software*: Adams MSC, CarSim, Simulink
- *Finite Element Analysis Software*: Autodesk Simulation & LS-Dyna
  - FEA on Tire Debeading Simulation: https://tinyurl.com/FEATire
- *Programming/Processing Software:* MATLAB, LabView, Arduino, Python, HTML, CSS
  - FFT Analysis on Steering Wheel Vibration: https://tinyurl.com/FFTVibration
  - Inverted PID Pendulum Controller: https://tinyurl.com/ControllerPendulum
  - Wavelet Analysis on Accelerations: https://tinyurl.com/WaveletAnalysis
- *Optimization/Mathematical Modeling: AMPL, Gurobi, MINOS*

SKILLS

- Fluent in English and Spanish
- Intermediate French
- Machine Learning/Neural Network Design
- Optimization Programming

PUBLICATIONS

Peer-Reviewed Journal Articles

- **Jacome, R.**, Stolle, C. and Sweigard, M., "*Road Curvature Decomposition for Autonomous Guidance*," SAE Technical Paper 2020-01-1024, 2020, doi:10.4271/2020-01-1024.
- **Jacome, R. O.**, Stolle, C., Faller, R. K., Grispos, G., *"A Dynamically-Concise Roadmap Framework for Guiding Connected and Automated Vehicles"* IFIP/IEEE IM 2021 - 4th International Workshop on Intelligent Transportation and Autonomous Vehicles Technologies. Bordeaux, France, May 2021, Manuscript Accepted for Publication
- **Jacome, R. O.**, Stolle, C., K., Grispos, G., *"Optimization of Road Reference Profiles for Connected and Automated Vehicles". IEEE, Transactions in Intelligent Transportation Systems,* Manuscript Submitted

Internal Reports

- **Jacome R.** Stolle, C., & Sweigard M., *"Smart Barrier Scheme for Autonomous Guidance - MATC Year Two Report",* Internal Report, October 2019.
- **Jacome R.** Stolle, C., & Sweigard M., *"Virtual Barriers for Mitigating and Preventing Run-off Crashes, Phase I",* Mid-America Transportation Center, Internal Report, August 2018.

PRESENTATIONS

- **Jacome R. O.**, *"Road Coordinates for Autonomous Vehicle Guidance"* Safety Performance and Analysis Doctoral Student Competition. P21-2128, at Transportation Research Board, Washington, DC, January 2021
- **Jacome R. O.**, *"Midwest Virtual Road Corridor (MVRC): An ultra-compact road map representation for CAVs"* Dwight David Eisenhower Transportation Fellowship Program Posters. P21-20421, January 2021
- **Jacome R.**, "*Road Curvature Decomposition for Autonomous Guidance",* Poster Presentation, Dwight Eisenhower Panel at Transportation Research Board, Washington, DC, January 2020
- **Jacome R.**, Trevino T. *"Multibody Simulation for Intersecting Slopes at Railway Roads using ADAMS MSC Software"*, Presentation, The University of Texas Rio Grande Valley, UTCRS Symposium, Edinburg, TX, October 2015.
- **Jacome R.**, Garcia R., Stutz J., & Moya J. *"Second Generation Multi-Station Polymer Creep-Tester",* Presentation, The University of Texas Rio Grande Valley, Senior Design Project, Edinburg, TX, May 2017.

FUNDED RESEARCH, FELLOWSHIPS, SCHOLARSHIPS

- **Grants**
- "*Virtual Barriers for Mitigating and Preventing Run-off-Road Crashes – Year 4*" Funded by Mid-American Transportation Center, $150,000 (2020-2021)
- "*Virtual Barriers for Mitigating and Preventing Run-off-Road Crashes – Year 3*" Funded by Mid-American Transportation Center, $120,000 (2019-2020)
- **Fellowships**
- Dwight David Eisenhower Transportation Fellowship, $20,000 (2018-2021)
- Nebraska Engineering Recruitment Fellowship $10,000 (2017-2019)
- **Scholarships**
- Society of Automotive Engineers (SAE) Doctoral Engineering Scholarship 2020-2021
- SAE/Heinz C. Prechter Automotive Excellence Scholarship for Young Innovators 2017-2018
- Mid America Transportation Center Student of the Year Award 2018