JAY TAVES

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EXPERIENCE

Simulation Based Engineering Lab October 2019 – Present
Research Assistant *Madison, WI*

- Managed development of SynChrono; an open-source C++ library which parallelizes the physics-based simulation engine Chrono, allowing hundreds of vehicles to operate in real-time.
- Prototyped and helped implement a re-write of Chrono::Vehicle's off-road terrain algorithm, speeding it up around 60 times and enabling it to scale to arbitrary deformable terrain sizes.
- Involved in project aiming to connect physical simulators such as the National Advanced Driving Simulator (NADS) with the SynChrono virtual environment for distributed simulation of scenarios involving autonomous and conventional vehicles.
- Established a Lie group-based approach to solving the index-3 Differential Algebraic Equations that govern the time evolution of multi-body systems made of rigid bodies, allowing for two to four times faster simulation compared to classical approaches.
- Wrote and gave talks on several conference papers and posters, gave technical presentations on design and use of SynChrono at SuperComputing 2020, IROS and ASME.

Epic Systems — Leading vendor of EMR (Electronic Medical Record) software August 2017 – June 2019
Interfaces Developer and Project Manager *Madison, WI*

- Developed a new parsing library and several smaller projects for Epic's HL7 pharmacy interfaces.
- Managed the conversion of Olmsted Medical Center's legacy patient data into Epic as they went live on Epic's EMR on one of the fastest time-lines that Epic has done to date.
- Managed interface testing and validation for United Regional Health Care System's transition to Epic.

Atomic and Alternative Energies Commission [CEA] Summer 2016
Fuel Cladding Simulation Intern *Saclay, France*

- Modeled the swelling of nuclear reactor fuel cladding in a French fourth generation fast breeder reactor.
- Created and ran simulations to test different swelling models for the cladding.
- Summarized simulation findings and results in a French technical report.

Zetron, Inc — develops mission critical emergency dispatch systems Summers 2013 – 2015
Web Developer *Redmond, WA*

- Developed a web tool that replaced Zetron's phone-based quoting process, streamlining the re-seller sales process.
- The web tool allows product specialists to create a questionnaire that re-sellers use to configure a product for sale.

EDUCATION

University of Wisconsin–Madison *Masters in Mechanical Engineering* *Expected: 2021*
Thesis on using Lie group numerical integrators to speed up rigid body dynamics simulation
Courses in high-performance computing, computational fluid dynamics, numerical analysis, numerical linear algebra

Cornell University *May 2017*
B.S. in Mechanical Engineering, Minor in Mathematics
Courses in Finite Element Analysis, Nonlinear Dynamics and Chaos

SKILLS

Programming	High-performance (CUDA, OpenMP, MPI), Web (JavaScript, C#, HTML), Scientific (C++, MATLAB, Python), Database (SQL, Mumps)
Management	Project leader for software development of the open-source library SynChrono. Project management for several Epic Systems interface installations
Languages	Fluent in French, working knowledge of Spanish