Jaideep Singh Chavan

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Summary

Seeking Co-Op/ Full-Time opportunities in Automotive/ Robotics Product Development- starting Jan 2019. May-19' Grad.

Education

- **Michigan Technological University** — Houghton, MI
  Master of Science in Mechanical Engineering; GPA: 3.81 — *Jan 2018 – May 2019*
- **Chalmers University of Technology** — Online
  Micromasters in Emerging Automotive Technologies — *Jun 2018 – May 2019*
- **Birla Institute of Technology and Science, Pilani** — Hyderabad, India
  Dual Major: MSc. Physics + BE. Mechanical Eng; Major GPA: 8.65/10.0 — *Aug 2010 – Jul 2015*

Professional & Technical Skills

- Matlab, Simulink, Amesim
- Inventor, Solidworks, NX
- ANSYS, Abaqus, ANSA
- C/C++, Python, OpenCV
- Model Based Design
- Automotive Controls
- Battery Systems Design
- e-Powertrain Development
- OBD-II, PCAN, NI cDAQ
- Vehicle Integration
- SAE J1634, 2929, 2464
- Prototyping

Experience

- **Engineering Learning Center, Michigan Tech** — Houghton, MI
  Graduate Teaching Assistant - ELC, MEEM — *Sep 2018 - Present*
  - GTA for multiple undergraduate courses at the ELC - Statics, Dynamics, Mechanics of Materials, and MATLAB.
- **GreyOrange Pte Ltd** — Gurgaon, India
  Mechanical Design & Integration Engineer — *Nov 2015 - Dec 2017*
  - Collaborated with six interdisciplinary teams to lead mechanical design of three variants of the BUTLER: A Goods to Person robot, from concept to production, including: Industrial Design, CAD, Prototyping, Validation & Certification.
  - Designed, Integrated & Released over 70% of electro-mechanical modules for two versions of BUTLER-M robot: Built Chassis & Load Structures, Electric Powertrains, Hardware & Sensor integration, Heavy Duty Gearboxes, EMI/ EMC shielded Enclosures, Hardware test setups for Accelerated Life Tests & HIL testing, Assembly Jigs & Fixtures.
  - Generated Control Strategies, performed analysis & mathematical modeling of electromechanical systems of the robot.
  - Engineered 3D CAD, validated and iterated designs using FEA, built & tested prototypes. Applied standard practices including Design for Manufacturing and Assembly (DFMA), tolerance analysis, and ASME Y14.5 GD&T principles.
  - Worked with 30+ suppliers, communicated requirements, supported supplier development, evaluation, & acceptance.
  - Led work on complete system reliability testing and successfully obtained CE certification. Led validation tests such as ALT, HALT, EMI/EMC (ISO 7637-2), Environmental tests (IEC 60068-2-1A/2B/30/64) in collaboration with ARAI.
- **Fiat Chrysler Asia-Pacific Technology Center** — Pune, India
  CAE Engineer - Intern — *Jul 2014 - Dec 2014*
  - Developed analytical models to accurately predict Minimum Door Closing Velocity for automotive swing doors.
  - Validated results from extensive CAE simulations. Improved run time & accuracy by 40% and 12% respectively.

Relevant Projects

- **HEV Modeling & Testing:** Designed Series/Parallel HEVs in Simulink to perform tests using standard Drive Cycles.
  - Developed Model Based designs of Automotive Systems in Simulink for Lateral, Longitudinal and Vertical control.
  - Conducted sensitivity analysis for impact of downsizing, mass, drag & rolling resistance reduction on Fuel Economy.
  - Devised Control Strategies for Torque Blending and Regenerative Braking in various operating modes of a S/P HEV.
  - Performed Road Load Measurement using Coastdown Testing (SAE J1263), used NI cDAQ, OBD-II & LabVIEW.
- **Li-Ion Battery Modeling:** Designed a BEV model in Simulink to perform Energy Consumption tests as per SAE J1634.
  - Developed an equivalent circuit battery model, analyzed aging mechanisms, calculated capacity fade & range reduction.
  - Optimized battery size within the constraints of warranty-time, operating conditions, target range, and drive cycles.
- **Li-Ion Battery Design:** Designed a Li Nickel Manganese Cobalt Oxide electrode to meet requirements of FreedomCAR.
  - Built battery models in Simulink to observe hybrid pulse power test capability (HPPC) with aging and temperature.
  - Determined the effect of aging on internal resistance, cell capacity, and available discharge energy of the battery pack.
- **Modular Vehicle Design:** Developed & Presented a novel approach for extensive modularization of an automobile using efficient modular design practices. Estimated gains & effects on vehicle weight, strength, fuel economy and performance.
- **SAE India Projects:** Led a team of 25 to design and build three university SAE collegiate competition vehicles as the Head of Design and Team Captain for: SAE India BAJA '15, SAE efficycle '13, and National Karting Championship '13.
  - Led Integration, Designed Chassis, Suspension & Steering Systems, evaluated Structural and Dynamic performance.

Publications

- Paper Publication at ***2016 SAE World Congress and Exhibition,*** SAE International (16M-0028/2016-01-0434). Roshan N, Jaideep S., **Evaluation of Minimum Door Closing Velocity Using Analytical Approach.**

Honors & Achievements

- Recipient of the prestigious **J. N. Tata scholarship**, awarded $21,500 for pursuing Masters' in Mechanical Engineering.
- Rated as a **"Champion"**, the highest rating, in all performance appraisal reviews at GreyOrange India.
- Presented with **"The Rising Star"** award by the CEO of GreyOrange, for remarkable contribution to the organization.
- Won the renowned **INSPIRE Scholarship**, received $8500 from Dept. of Science & Technology, Govt. of India.
- Won **"Certificate of Excellence"** & over $6500 in cumulative awards for designing, fabricating, racing & winning against 250+ teams in RC prototype Race Car competitions at: IIT-Bombay, IIT-Kanpur, IIT-Kharagpur, and BITS-Pilani & more.