Jaideep Singh Chavan [in]

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SUMMARY

Experienced Mechanical Engineer seeking Opportunities in Product Design & Integration, EV Powertrain, Battery Systems Design and Development, starting Jan - 2019.

EDUCATION

Michigan Technological University — Michigan
Master of Science in Mechanical Engineering; GPA: 3.81 — *Jan 2018 – May 2019*

Birla Institute of Technology and Science, Pilani — India
Dual Major: MSc. Physics + BE. Mechanical Eng; Major GPA: 8.65/10.0 — *Aug 2010 – Jul 2015*

PROFESSIONAL & TECHNICAL SKILLS

- Matlab, Simulink
- Inventor, Solidworks, NX
- ANSYS, Abaqus, ANSA
- C/C++, Python
- DFMA, GD&T Y14.5
- Hardware Integration
- Testing & Validation
- Battery Systems Design
- e-Powertrain Development
- DFMEA
- Prototyping
- SAE J1634, 2929, 2289

EXPERIENCE

Engineering Learning Center, Michigan Tech — Houghton, MI
Graduate Teaching Assistant - ELC, MEEM — *Sep 2018 - Present*
- GTA at the ELC teaching Statics, Dynamics, & Mechanics of Materials to 900+ students in Mechanical Engineering.

GreyOrange Robotics [↗] — Gurgaon, India
Mechanical Design & Integration Engineer, R&D — *Nov 2015 - Dec 2017*
- Collaborated with six multi-disciplinary teams to lead **design & integration of three versions** of autonomous Goods-to-Person robots, from **concept-to-production:** Architecture, Design, Production, Validation & Certification.
- Designed, Integrated & Released **over 70%** of all electro-mechanical systems (400+ Drawings) using several manufacturing processes: Chassis & Load Structures, Powertrains, Gearboxes, Electronics Enclosures, HIL Test Setups.
- Responsible for **sensor selection, architecture and integration** of all electromechanical and hardware systems (Lidar, Camera, ODS, Proximity, IR, safety edge, IMU, Powertrains, Battery Systems, Enclosures, Harness etc)
- Generated Control Strategies, performed **analysis & mathematical modeling** of all systems of the BUTLER robot.
- Supported production build events, conducted cross-functional design reviews and Root Cause Analyses. **Influenced design decisions** to improve manufacturability, assembly, serviceability, and reliability.
- **Worked with 30+ suppliers**, communicated requirements, supported supplier development, and evaluation.
- Led work on **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.
- Undertook mentorship and growth responsibility of two full-time employees and four graduate interns in the team.

Fiat Chrysler Asia-Pacific Technology Center — Pune, India
CAE Engineer - Intern, R&D — *Jul 2014 - Dec 2014*
- **Developed analytical models** to accurately predict Minimum Door Closing Velocity for automotive swing doors.
- Validated results from CAE simulations. Improved simulation computation time by **40%** & accuracy by **12%.**

ACADEMIC 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.
  - Devised **Control Strategies** for Torque Blending and Regenerative Braking in various operating modes of an **HEV.**
- **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, capacity loss & 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 **DoE FreedomCAR needs.**
  - Built **battery models in Simulink** to observe hybrid pulse power test capability (HPPC), aging and fade.
  - Estimated 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 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.
- Awardee of 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.