TAVISH PATTANAYAK

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OBJECTIVE

PhD Candidate with proven research ability in computational aerodynamics, aircraft design, optimization, human factors, and systems engineering. Possessing background in aerodynamic analysis, aircraft systems, multidisciplinary optimization, systems engineering tools, and statistics through coursework and research projects. Currently pursuing doctoral studies on Uncertainty Quantification techniques for NASA's Electrified Propulsion Flight Demonstrator project. Seeking opportunities to broaden experience across engineering disciplines.

EDUCATION

Doctor of Philosophy (Ph.D.) in Aerospace Engineering, Georgia Institute of Technology (Expected) 2025
Selected Courses: Advanced Design Methods, Cognitive Engineering, Safety by Design, Aerospace Systems Engineering

Master of Science (M.S.) in Aerospace Engineering, Georgia Institute of Technology 2023
Selected Courses: Viscous Fluid Flow, Advanced Aerodynamics, Optimization for the Design of Engineered Systems, Aircraft Design I/II CGPA : 3.9/4

Bachelor of Technology (B.Tech.) in Mechanical Engineering, Manipal Institute of Technology 2021
Minor in Thermodynamics CGPA : 8.7/10
Selected Courses: Manufacturing Technology, Computational Fluid Dynamics, Production Planning I& Control,CAD-CAM

EXPERIENCE

Department Manager 2021
Flipkart (Walmart) ***Bangalore, KA, India***

- **Developed and reported KPIs (Key Performance Indicators), performed RCAs (Root Cause Analysis) and liaised with various stakeholders for improving supply chain operations.**
- **Significantly reduced damages and thefts in inventory through simple yet innovative measures.**
- **Managed a workforce of three hundred off-roll and twenty on-roll employees in the outbound department.**
- **Enacted inventory management strategies, oversaw day-to-day operations, documented, and promoted best practices in a fast-paced work environment.**

Aerodynamics Engineer 2018 - 2020
MotoManipal ***Manipal, KA, India***

- **Designed and manufactured an electric superbike from scratch and evaluated it for conformance to engineering principles and quality standards.**
- **Planned and conducted experimental, environmental, operational, and stress tests on models or prototypes of the bike and associated systems.**
- **Prepared technical reports or other documentation, such as handbooks or bulletins, to be used by engineering staff or management and for future use.**

Summer Intern 2019
Delhi Metro Rail Corporation ***New Delhi, India***

- **Worked in the assembly of the bogey at the yard and inspected parts of the metro trains in the yellow line.**
- **Learned cooling, transmission, lathe and other machines for successful maintenance operations of the coach.**
- **Pseudo-drove the coach in order to know about the various controls at the driver's disposal.**

RESEARCH EXPERIENCE

NASA's Electrified Propulsion Flight Demonstration Program - Georgia Institute of Technology, Atlanta
2023-Present

- **Uncertainty Quantification and analysis for future hybrid electric aircraft architectures.**
- **Demonstrated new UQ methods on parallel hybrid-electric propulsion vehicle mode; contrasted projections between methods and highlighted advantages.**
- **Authored sections of the conference paper presenting new UQ methodology; collaborated with multi-disciplinary team on implementation and testing.**

Advanced Race Car Analysis and Development Environment - Georgia Institute of Technology, Atlanta
2021-22

- **Worked on modeling the steering subsystem as part of the effort to model the race car.**
- **Worked on the animation of the outputs obtained from the Dymola model to verify the model with the physical test.**

Determining the usability of recycled cotton fibers and PET as an effective composite - Manipal Institute of Technology, Manipal
2019-20

- **Cotton fibers were reclaimed from discarded denim garments and treated with chemicals. PET was collected from discarded juice/water bottles and shredded using a shredder.**
- **Tested a blend of the cotton fibers and shredded PET for strength.**
- **Sustained the use of the blend as a substitute for composites in automotive parts.**

Structural and Optical Study of Metal Nanoparticles and their Antimicrobial Activity - Manipal Institute of Technology, Manipal
2017-18

- **Reproduced the synthesis of nanoparticles using Turkevich Method and found out the optimum concentration to get the maximum yield.**
- **Developed a green synthesis method for obtaining nanoparticles using dried green leaves.**
- **Examined the anti-microbial property of the synthetic nanoparticles.**
- **Investigated the reaction to various reagents including but not limited to polyvinyl alcohol and tri methoxy silane.**

PAPERS

Impact of Technological Uncertainty on Design ParameterSelection of the NASA Parallel Hybrid-ElectricPropulsion EPFD Vehicle **Link**
R. Gautier, L. Teta, J. Uzodinma, T. Pattanayak, M. Walter, T. Zaidi, and D. Mavris
(***AIAA Aviation, 12-16, June 2023, San Diego, California***)

Real-time Visualization of Simulation Results using Animation Tools **Link**
Tavish Pattanayak, Michael Balchanos, Burak Bagdatli, Dimitri Mavris
(***NAFEMS World Congress [NWC23], 15-18, May 2023, Tampa, Florida***)

Effects of Electromagnetic Radiations of Communication GadgetsAssociated with Genotoxic Effects on Orofacial Structures and Health Link
Tavish Pattanayak, Nithesh Naik
(*Pre-print, 2020*)

Study of Optical and Electrical properties of Polymer-Nanomaterial Composites
Akshat Joshipura, Siddharth P Kawishwar, Sangeetha, Joel Aubrey Patel, Tavish Pattanayak, Neil Nelson Sequeira, Gurumurthy SC
(*Condensed Matter Physics and Applications [CMPA 2018], 10-11, September 2018, MIT, Manipal.*)

Study of Electrical and Optical Properties of 2D materials in PVA/Pullulan blends
Praneeth Ratnagiri, Sangeetha Bhat, Neil Nelson Sequeira, Tavish Pattanayak, Gurumurthy SC
(*Condensed Matter Physics and Applications [CMPA 2018], 10-11, September 2018, MIT, Manipal.*)

Antibacterial Effect of Silver Nanoparticles and Effect of MPTMS on Silver Nanoparticles Film and Colloids
Praneeth Ratnagiri, Tanaya Mandke, Pullkit Maheshwari, Joel Aubrey Patel, Tavish Pattanayak, Gurumurthy SC
(*Paper Presentation by TechTatva 3-7, October 2017, MIT, Manipal.* 🏆 Best Paper Award)

Antimicrobial activity of colloidal silver, iron nanoparticles prepared by chemical and green synthesis method
Tavish Pattanayak, Praneeth Ratnagiri, Joel Aubrey Patel, Murari MS, Mukunthan KS, Kannan N, Mohan Rao K and Gurumurthy SC (*Condensed Matter Physics and Applications [CMPA 2017], 22-23, September 2017, MIT, Manipal.*)

Effect of Organic Dopants on the Structural & Optical Properties of Colloidal Silver Nanoparticles & Nanoparticulate Films
Joel Aubrey Patel, Praneeth Ratnagiri, Tavish Pattanayak, Anjana Uday, Anju Jolly, Murari M S, Mukunthan KS, Kannan N, Mohan Rao K and Gurumurthy SC (*Condensed Matter Physics and Applications [CMPA 2017], 22-23, September 2017, MIT, Manipal.*)

AWARDS & PROFESSIONAL SERVICES

- Served as a judge for the poster and oral presentations in the 16th and 17th Annual Undergraduate Research Symposium
- Best design and best commercial bike at the Asian Electric Bike Competition (AEBC- 2019) held at Visakhapatnam, India News
- Best paper at IEEE paper presentation in 2019.
- Best paper award at the National Conference on Youth in Social Change held in 2020.
- 6th in the Hult Prize Challenge – 2019

LEADERSHIP

Team Facilitator **2022-2023**
Grand Challenges, Georgia Institute of Technology

- Held weekly meetings with the team and facilitated guided conversations
- Helped solve inner-team conflicts, ensure all members are contributing, and assisted the team to communicate with one another

Leadership Fellow **2022-Present**
Leadership Education and Development, Georgia Institute of Technology

- Professionally trained in leadership and coaching
- Provided one-to-one coaching to mentees for the duration of a semester by guiding them through the difficult task of self-examination

President **2019-2020**
Lakshya-The Agri Club, Manipal Institute of Technology

- **Designed an agriculture drone as per the specifications of the farmer organizations**
- **Fabricated and installed a hydroponics system**
- **Created a working prototype of a table-top milk pasteurizer**
- **Developed an insulator in collaboration with MPower, Duke University**

Co-head **2019-2020**
Student Support Team, Manipal Institute of Technology

- **Counseled peers and connected those who needed help to counselors and psychiatrists**
- **Co-ordinated with the student welfare department of the college to take steps to end the stigma surrounding mental health among the residents of the campus**
- **Managed social media accounts for the team**
- **Initiatives helped bring down the suicide rate for students on campus**

Vice-President **2019-2020**
Ek Sangharsh, Manipal Institute of Technology

- **Organized games, activities and took classes for children from underprivileged communities**
- **Visited schools and aided the staff there to conduct day-to-day activities**

General Secretary **2019-2020**
Mudra-The Imprint, Manipal Institute of Technology

- **Co-founded the organization to strengthen primary school literacy across states in India**
- **Taught basic computer and mathematics to children at government schools**