

# Oshin Tyagi

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## EDUCATION

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### Texas A&M University (2019-present)

PhD in Industrial Engineering with focus on Health and Human Systems Engineering. (**GPA: 4.0/4.0**)

**Dissertation topic:** Identifying the neural and central mechanisms of fatigue under stress and associated sex differences in older adults.

### Texas A&M University (2017-2019)

MS in Industrial Engineering with focus on Operations Research. (**GPA: 3.67/4.0**)

Relevant coursework: Linear and Nonlinear Programming, Network based planning in Stochastic Systems, Engineering Data Analysis and Prediction, Decision Making (Game Theory), Simulation.

**Project – Quarry location for Centex Materials LLC:** Worked in a team of four to find a suitable location for a limestone quarry. We used data from TNRIS and USGIS to find locations with suitable limestone concentration. We developed a facility location optimization model to minimize trucking costs from quarry to Centex's concrete plants.

### Indian Institute of Technology, Roorkee (2012-2016)

Bachelor of Technology in Production and Industrial Engineering

**Final Year B. Tech Project:** Investigation on Electrochemical Discharge Machining (August, 2015 – May 2016) A parametric study of ECDM machining of borosilicate glass to determine optimum conditions for machining. Awarded Institute medal from IIT Roorkee for best B. Tech Project.

## RESEARCH INTERESTS

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Neuroergonomics, human factors and ergonomics, operations research, neuromuscular fatigue in older adults, learning under stress, neuromuscular fatigue under stress and other cognitive perturbations, brain networks and connectivity, granger causality, effective and functional connectivity.

## RESEARCH PUBLICATIONS

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### Journals

1. Tyagi, O., Hopko, S., Kang, J, Shi, Y., Mehta, R. K., Du, J. (Submitted). Modeling Brain Dynamics during Virtual Reality-based Emergency Response Training under Stress. *Human Factors*.

2. Kang, J., Shi, Y., Tyagi, O., Mehta, R. K., Du, J. (Submitted). Effectiveness of Learning under Stress in Immersive VR: An Investigation of Firefighter Performance, Gaze Entropy, and Pupillometry. *Human Factors*.
3. Shi, Y., Kang, J., Xia, P., Tyagi, O., Mehta, R. K., & Du, J. (2021). Spatial knowledge and firefighters' wayfinding performance: A virtual reality search and rescue experiment. *Safety science*, 139, 105231.
4. Tyagi, O., Zhu, Y., Johnson, C., Mehta, R. K., Sasangohar, F., Erraguntla, M., & Qaraqe, K. (2020). Neural Signatures of Handgrip Fatigue in Type 1 Diabetic Men and Women. *Frontiers in Human Neuroscience*, 14, 477.
5. Cheema, M. S., Singh, P. K., Tyagi, O., Dvivedi, A., & Sharma, A. K. (2016). Tool wear and form accuracy in ultrasonically machined microchannels. *Measurement*, 81, 85-94.

## Conferences

1. Tyagi, O., Mehta, RK. (2021). Neuroergonomic assessment of gender differences in motor performance and fatigue. *Applied Ergonomics Conference. Virtual. March 22-25*.
2. Tyagi, O., Mehta, RK., Zhu, Y., Sasangohar, F., Erraguntla, M., Qaraqe, K. (2020). Neuromuscular Fatigue Mechanisms in Type 1 Diabetic Men and Women. *Human Factors and Ergonomics Society Annual Meeting. Virtual. Oct 5-9*
3. Tyagi, O., Hopko, S., Mehta, RK. (2020). Learning under stress in Virtual reality for firefighters: A Neuroergonomics Perspective. *IISE Annual Conference & Expo 2020. Virtual. Nov 1-3*.

## WORK EXPERIENCE

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### Research Assistant at Neuroergonomics Lab at Texas A&M University (2019-present)

Project 1: Measurement of hand-grip fatigue and hemodynamic response of motor regions of the brain using functional Near-Infrared spectroscopy in Type 1 diabetic patients.

Project 2: Understanding the biomarkers (eye gaze tracking, brain activity and heart rate) of learning under stress for firefighters in virtual reality.

Project 3: Identifying the central mechanisms of fatigue under stress, the role of brain activity in physical performance under stress, and associated sex differences in older adults.

Project 4: Developing a neural efficiency-based evaluation model for shoulder exoskeletons.

Project 5: Evaluating low back exoskeletons for providing support to medical professionals for patient handling.

### Business Analyst at ZS Associates PVT LTD (2016-2017)

Consulted for international big pharma companies for market research. Project included designing surveys to understand the opinion and awareness of new drugs relative to competing options in the market, analysis of survey response data on ZS proprietary software, preparation of survey questionnaire, and final presentation of analysis.

## SERVICE AND LEADERSHIP

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**President of student chapter of Human Factors and Ergonomics Society at Texas A&M University (2019-2020).** Our chapter was awarded a silver medal by the Human Factors and Ergonomics society in recognition of our efforts

**Company coordinator at the Training and Placement Office of IIT Roorkee (2015-16).** Responsible for contacting Consulting and Finance companies and organizing recruitment process of fellow students for jobs and internships

**Treasurer and Additional Secretary at ASME IIT Roorkee chapter (2013 – 2016).** Student member of organization representing IIT Roorkee in ASME. We organized workshops for teaching SolidWorks, MATLAB and other software to students, represented IIT Roorkee to the SPDC conference of 2015 and organized as well as participated in several robotics events.

## SKILLS

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**Computer Languages:** C++, Python

**Software Packages:** MS Office, SolidWorks, MATLAB, RStudio, SIMIO, Visual Studio, CPLEX, JMP, SPSS.

**Languages Known:** English (SRW), Hindi (SRW)

## MENTORSHIP

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### Research Supervisor

- Jingkun Wang, undergraduate student (2020-present)
- Alekya Konda, undergraduate student (2020-present)

## REFERENCE

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Dr. Ranjana Mehta, Associate Professor, & Director, NeuroErgonomics Lab, Industrial & Systems Engineering

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