# NIKHIL **VERMA**

RESEARCH FELLOW, UNIVERSITY OF PITTSBURGH

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## Fields of Interest

**Brain-Computer Interface, Neural Engineering, Artificial Intelligence, Signal Processing, Augmented Reality.**

## Education

### National Institute of Technology, Raipur — *Biomedical Engineering*

BACHELORS IN TECHNOLOGY (B. TECH) — *CPI: 8.83/10.0*

- Department Rank 3

## Experience

### Rehabilitation Neural Engineering Lab, University of Pittsburgh — *Pittsburgh, PA*

RESEARCH FELLOW — *Aug 2019 - Present*

Worked in the mentorship of Dr. Douglas Weber, developing motor control decoding algorithm to control ankle-foot prosthesis for lower limb amputees.

SUMMER RESEARCH STUDENT — *May 2019 – Aug 2019*

Worked in the mentorship of Dr. Jennifer Collinger, towards development of the Portable Intracortical BCI system according to the User-Centered Design parameters and analyzing its Usability and User Experience providing valuable insights for areas of further development.

### MIT Media Lab — *Boston, MA*

SUMMER RESEARCH STUDENT | KHORANA SCHOLAR — *May 2018 - July 2018*

Worked in the mentorship of Dr. Pattie Maes, collaborated with a neuroscientist on the project Dormio. Developed Signal Processing and Machine Learning algorithm on various biosignals.

### Siemens Healthineers — *Indore, India*

BIOMEDICAL ENGINEERING INTERN — *December 2017 - January 2018*

Resolved technical issues for various medical devices like CT-16 slices, 1.5T MRI, 3-D and Dual display C-Arm.

### All India Institute of Medical Sciences — *Raipur, India*

RESEARCH INTERN — *May 2017 - July 2017*

Collaborated with the neurophysiologist to work on a technique to augment sleep- Engineering Sleep. Primarily worked on Sleep Stage detection using EEG and Signal Processing.

## Projects

### Tadashi- Your Personal Healthcare Companion — *Banglore,India*

Computer Vision, Deep Learning, OpenCV, TensorFlow, Keras — *December 2018 - Present*

This project creates an opportunity for upper limb amputees to obtain a sensory feedback by stimulating the peripheral nerves in their residual limb giving them the sensation of touch in different fingers and completing the loop in human-machine interfaces.

### Sparsh- Restoring Tactile Sensation in Upper Limb Amputees — *Raipur,India*

ADVISOR: PROF. BIKESH KUMAR SINGH (BACHELOR THESIS PROJECT-1) — *August 2018 – December 2018*

This project creates an opportunity for upper limb amputees to obtain a sensory feedback by stimulating the peripheral nerves in their residual limb giving them the sensation of touch in different fingers and completing the loop in human-machine interfaces.

### Dormio- Interfacing with Dreams to Augment Human Creativity — *Boston,MA*

ADVISOR: PROF. PATTIE MAES, FLUID INTERFACES GROUP — *May 2018 - July 2018*

This system allows for access to semi-lucid sleep states that can successfully influence, extract information from, and leverage cognition hap-pening during the early stages of sleep to augment human creativity.

### BrainSense- Mind Controlled Robot — *Raipur,India*

ADVISOR: PROF. R. PERIYASAMY — *August 2017 - October 2017*

This project acts as an inception for developing a vehicle, or wheelchair allowing patients with motor disability to control it using their minds through Brain-Computer Interfaces.

### Engineering Sleep-Sleep Monitoring and Manipulation Setup — *Raipur,India*

ADVISOR: DR. MEENAKSHI SINHA — *May 2017 - June 2017*

The vision was to establish a system for measuring cerebral activity to recognize deep sleep by detection of delta waves and stimulate synchro-nized auditory signals to enhance the quality of sleep and improve memory.

## Achievements and Awards

- Awarded *Khorana Fellowship 2018* to work at MIT Media Lab, amongst 40 students all over the country.
- Selected amongst top 20 teams from India in GE Healthcare Precision Challenge 2018 for presenting “Tadashi”.
- Winners in *Vigyaan*, *The National Science Exhibition-2017* for presenting ”Brain Sense”.
- Runners up in *IEEE Skill and Knowledge Enhancement Programme*-2016 for presenting” Small Mouth”.
- Runners up in *Vigyaan, The National Science Exhibition-2016* for presenting ”Small Mouth”.
- Won Bronze medal in State level Roller Hockey competition.

## Skills

**Software** Python, Matlab, C, C++, Labview, LaTeX
**Hardware** Arduino, RasperryPi, Cura, SketchUp, Multisim
**Libraries** NumPy, Pandas, TensorFlow, Keras, OpenCV

## Relevant Courses

Applied Physics, Applied Chemistry, Biomedical Signal Processing, Microelectronics and Integrated circuits, Artificial Intelligence and Neural Networks, Fundamentals of Neuroscience, Biomaterials, Microcontrollers and Microprocessors, Bioelectricity, Neural Data Analysis.