

# Akash Pandey

## Curriculum Vitae

PhD Candidate, Mechanical Engineering  
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### Education

- 2021–present **PhD, Mechanical Engineering**, *Northwestern University*, Illinois, USA.  
Studying proteins using Machine Learning  
Advisor : Dr. Sinan Keten and Dr. Wei Chen  
CGPA : 3.97/4
- 2014–2017 : **Masters (by research), Applied Mechanics**, *Indian Institute of Technology Madras*, India.  
Study of the fatigue behavior of macro fiber composite (MFC)  
CGPA : 9.4/10
- 2010–2014 : **Bachelor of Engineering, Automobile Engineering**, *Madras Institute of Technology, Anna University*, India.  
CGPA : 8.78/10

### Publications and Conferences

- 2022 Payal Mohapatra, Akash Pandey, Bashima Islam, and Qi Zhu. Speech disfluency detection with contextual representation and data distillation. In *Proceedings of the 1st ACM International Workshop on Intelligent Acoustic Systems and Applications*, IASA '22, page 19–24, 2022.
- 2017 Akash Pandey and A. Arockiarajan. Performance studies on macro fiber composite (mfc) under thermal condition using kirchhoff and mindlin plate theories. *International Journal of Mechanical Sciences*, volume 130, pages 416–425, 2017.
- 2017 Akash Pandey and A. Arockiarajan. Fatigue study on the sensor performance of macro fiber composite (mfc): Theoretical and experimental approach. *Composite Structures*, volume 174, pages 301–318, 2017.
- 2017 Akash Pandey and A. Arockiarajan. Fatigue study on the actuation performance of macro fiber composite (mfc): theoretical and experimental approach. *Smart Materials and Structures*, volume 26, page 035018. IOP Publishing, feb 2017.
- 2017 Akash Pandey and A. Arockiarajan. An experimental and theoretical fatigue study on macro fiber composite (mfc) under thermo-mechanical loadings. *European Journal of Mechanics - A/Solids*, volume 66, pages 26–44, 2017.
- 2016 Akash Pandey and A. Arockiarajan. Experimental studies on fatigue behavior of macro fiber composite (MFC) under mechanical loading. volume 9803, page 98032V. SPIE, 2016.
- 2016 Akash Pandey and A. Arockiarajan. Actuation performance of macro-fiber composite (mfc): Modeling and experimental studies. *Sensors and Actuators A: Physical*, volume 248, pages 114–129, 2016.
- 2016 *Methods for Measuring the Life of the MFC as Sensor and Actuator at High Temperature*, Smart Materials, Adaptive Structures and Intelligent Systems, 09 2016.

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## Research Experience

### Northwestern University

April, 2022 – present ***Sequence-based model to study the dynamic property of proteins.***  
Developed an LSTM-based deep learning model to predict proteins' B-factor (dynamic property) based on the primary sequence. Using the model, extracted some physically relevant information about the protein's dynamic behavior. Manuscript submitted to *Cell Patterns*.

Collaborators: Dr. Sinan Keten (*Northwestern University*) Dr. Wei Chen (*Northwestern University*)

Jan, 2022 – ***Deep learning model to detect Speech Disfluency using wav2vec embeddings.***

June, 2022 Developed a deep learning model to detect different types of speech disfluency. Presented this work at the workshop on intelligent acoustics co-located with ACM MobiSys'22 as a second author.

### Indian Institute of Technology Madras

July, 2014 – ***Study of the fatigue behavior of Macro fiber composite(MFC).***

April, 2017 Firstly, I developed experimental setups to study the fatigue behavior of MFC under various loading conditions and then I developed finite element (FEM) models to predict the same behaviors.

Collaborators: Dr. A. Arockiarajan (*Indian Institute of Technology Madras*)

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## Professional Experience

### Infosys Ltd: Engineering Lead

Jan, 2021 – ***Stress Analysis and Life Assessment of Rolls-Royce Engine's Disc.***

Aug, 2021 Performed stress analysis, and life assessment of Nickel and Titanium alloy discs in XWB engines. I also developed algorithms to track the fatigue life consumption of the disc continuously

### Rolls Royce: Engineering Graduate and later as Advanced Engineer

Jan, 2019 – ***Stress Analysis and Life Assessment of Rolls-Royce Engine's Disc.***

Dec, 2020 Performed stress assessment and life assessment of Nickel and Titanium alloy discs in Trent 1000 and XWB engines. I was also promoted to a position of a reviewer for technical work in our team

July, 2017 – ***Assumed various roles as a part of a rotation program.***

Dec, 2018 As an engineering graduate, I worked in four different teams to get a breadth about the aero-engine design, analysis, manufacturing, and testing.

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## Teaching Assistantship

Spring, 2022: **Introduction to Aerospace Engineering**, Northwestern University.

Winter, 2016: **Finite Element Analysis**, IIT Madras.

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## Fellowships & Awards

Feb, 2023 Secured 3<sup>rd</sup> place in *e-Prevention: Person Identification and Relapse Detection from Continuous Recordings of Biosignals* challenge in ICASSP'23. Invited to present a paper on methodology.

Sept, 2021 - Walter P. Murphy Fellowship at Northwestern University

June, 2022

Jan 2019 Recognized as the best outgoing engineering graduate and selected for an accelerated leadership program at Rolls-Royce

July, 2014 - Awarded Research Fellowship by Govt. of India

April, 2017

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## Computer skills

Programming Languages Python,  $\text{\LaTeX}$

Technologies Pytorch, Tensorflow, Sklearn, Pandas

Software ABAQUS, NX, MATLAB