Nikhil Saini | **183059006**
Computer Science & Engineering | **M.Tech.**
Indian Institute of Technology, Bombay | **Gender: Male**
DOB: 01-09-1996

Examination	University	Institute	Year	CPI / %
Post Graduation	IIT Bombay	IIT Bombay	2021	null
Graduation	MSU Baroda	FTE, MSU, Baroda	2018	72.80%
Intermediate	CBSE	Kendriya Vidyalaya	2014	94.40%
Matriculation	CBSE	Kendriya Vidyalaya	2012	9.4

FIELDS OF INTEREST

- Machine Learning
- Natural Language Processing
- Speech
- Algorithms

PUBLICATIONS

- **ACL 2020: Generating Fluent Translations from Disfluent Text Without Access to Fluent References: IIT Bombay@IWSLT2020**
  Nikhil Saini, Jyotsana Khatri, Preethi Jyothi, Pushpak Bhattacharyya
  Proceedings of the 58^{th} Annual Meeting of the Association for Computational Linguistics: System Demonstrations

MASTER'S THESIS & RESEARCH PROJECTS

- **Spoken Language Translation & Disfluency Correction**
  Master's Thesis | Guide: ***Prof. Preethi Jyothi & Prof. Pushpak Bhattacharyya*** *(Jun 2020 - Ongoing)*
  - **Objective:** Speech to Speech Indian Language translation, **Ministry of Education.**
  - **Current Work:** Unsupervised Disfluency correction in conversational speech via leveraging Noise Induction & Unsupervised Style Transfer techniques.
  - Converted Bi-LSTM Pytorch codebase of Unsupervised Style Transfer into Transformer architecture.
  - **Future Scope:** Introducing speech modality into disfluency correction, Speech to Text & Speech to Speech Language Translation on low resource Indian Languages.

- **Spoken Language Translation**
  Master's Seminar | Guide: ***Prof. Preethi Jyothi & Prof. Pushpak Bhattacharyya*** *(Jan 2020 - May 2020)*
  - Did a literature survey on Text to Text and Speech to Text Machine Translation.
  - **Participated in IWSLT 2020**, Conversational Speech Translation Task, and **published** in the ACL workshop.
  - Implemented Transformer based Encoder-Decoder architecture to translate from disfluent Spanish text to fluent English and obtained a **BLEU Score 28.1 beating NAIST's submission** on ASR input text.

- **Unsupervised Neural Machine Translation**
  R&D Project | Guide: ***Prof. Pushpak Bhattacharyya*** *(Jan 2020 - May 2020)*
  - Surveyed state-of-the-art UNMT approaches like CLWE, DAE & Backtranslation.
  - Obtained **BLEU Scores** on Indian language pairs with **28.54** on Hindi-Punjabi pair.
  - Used Transfer Learning, Supervised, Semi-Supervised techniques to increase UNMT BLEU scores.
  - Implemented a **web-service** to translate among Indian Languages using UNMT pre-trained models.
  - Concluded the failure of SOTA architectures on low resource Indian languages, opening new fields of research.

- **Preordering in Neural Machine Translation: Helpful or Not?**
  R&D Project | Guide: ***Prof. Pushpak Bhattacharyya*** *(Jul 2019 - Nov 2019)*
  - Studied Statistical, Phrase-Based & Neural Machine Translation approach.
  - Obtained a **BLEU Score 14.25** with no preordering & **12.63** with Hindi tuned preordering in English-Hindi language pair using NMT.
  - Concluded that preordering source side sentences improves the translation quality in Phrase-Based Statistical Models but not in NMT for English-Indian direction.

UNDERGRADUATE & COURSE PROJECTS

- **ASR for Low Resource Indian Languages**
  CS753: Automatic Speech Recognition | *Instructor:* ***Prof. Preethi Jyothi*** *(Nov 2019)*
  - **Objective**: To recognize speech in Indian languages by using CNN-LSTM Encoder-Decoder architecture.
  - Used Transfer Learning & Speaker adaptation techniques to recognize speech in Indian languages.
- **Cardiovascular Disease Classification**
  CS725: Foundations of Machine Learning | *Instructor:* ***Prof. Ganesh Ramakrishnan*** *(Nov 2018)*
  - **Objective**: To implement a Convolutional Neural Network to classify heartbeat audio sounds.
  - Used Transfer Learning on the spectrogram to do a four-class classification of audio files.
- **Instant Messaging Application similar to Slack**
  CS699: Software Lab | *Instructor:* ***Prof. Umesh Bellur*** *(Nov 2018)*
  - **Objective:** To implement a web-browser based instant messaging app similar to Slack.
  - Implemented functionalities like creating new workspace/channel for secure communication between authorized users, registering via mail, reply to & deletion of previous messages, etc.
- **Lucid Simulations: Simulating CS Fundamentals**
  B.Tech Major Project | *Instructor:* ***Prof. Anjali Jivani*** *(Apr 2018)*
  - **Objective:** An interactive simulation website designed for learning Computer Science concepts.
  - Used JavaScript to model simulations of **44** concepts in DSA, OS, AI/ML & Computer Graphics.
- **Load Balancer for Applications**
  B.Tech Course Project | *Instructor:* ***Prof. Mamta C. Padole*** *(Apr 2018)*
  - **Objective**: To implement a Load Balancer using JAVA Technology.
  - Used Remote Method Invocation, Multicasting & TCP to balance load amongst servers.

WORK EXPERIENCE

- **Computer Center, IIT Bombay** *Research Assistantship (System Administrator)* *(Jul 2018 - Ongoing)*
  - Responsible for monitoring & maintaining over **750 Cisco & Extreme switches** and over **150 VMs** running various services via Zabbix Monitoring System.
  - Booked Scheduler: Maintaining & upgrading the web service to allow institute-wide lab bookings.
  - Developed Network Troubleshooting App: Version 1.0.
  - **Current Work:** Implementation of **ELK Stack** to search, analyze, and visualize logs from multiple live internal servers/services.

MAJOR COURSES TAKEN

- Automatic Speech Recognition
- Algorithms & Complexity
- Advanced Machine Learning
- Computing Systems
- Foundations of Machine Learning
- Blockchain

POSITIONS OF RESPONSIBILITY

- **Student Companion - Institute Student Companion Program** *(IIT Bombay, Jul 2019 - Jun 2020)*
  - Coordinated orientation of 1867 PG freshmen with a team of 177 student companions and coordinators.
  - Facilitated 6 freshmen on a one-to-one basis, helping them on academic and non-academic fronts.
- **Organizer, Smart India Hackathon** *(IIT Bombay, Jul 2019)*
  - Coordinated with a team of 30 members for conducting SIH 2019 organized by Computer Center.
- **Paramarsh: Non-Tech Fiesta** *(FTE, MSU, 2015)*
  - Organized a national level, non-technical college fiesta with a team of 86 members.

TECHNICAL SKILLS

- **Programming Languages:** C, C++, Python, Bash
- **Libraries:** OpenNMT-py, Fairseq, Moses, Kaldi, pandas, NumPy
- **Tools:** Pytorch, TensorFlow, Vim, Git, LaTeX
- **Frameworks:** Django, Bootstrap

ACHIEVEMENTS

- Cleared **TCS CodeVita** Round I & received **Offer Letter**. *(2017)*
- **Published** a book on Operating Systems in ICE GATE Institute for CS/IT students. *(2018)*
- Won **Gold** in Intra-departmental Basketball as **Captain**, IIT Bombay. *(2020)*
- Won **Gold** in Intra-departmental Volleyball, IIT Bombay. *(2019)*
- Won **Bronze** in Inter-departmental Volleyball PGGC Sports, IIT Bombay. *(2019)*
- **First Rank** in class in XII standard, C.B.S.E. *(2014)*