

# Abhinav Thukral

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## Education

### Delhi Technological University

Aug 2015 – Aug 2019

B.Tech in Electronics & Communications Engineering

- CGPA: **8.98 / 10**
- Advisor: Dr. S. Indu, Head of Department, ECE
- Relevant Courses: Machine Learning, Computer Vision, Natural Language Processing, Algorithm Analysis & Design, Data Structures & Algorithms, Computer Architecture, Digital Image Processing, Embedded Systems

## Work Experience

### Weave Lab, IIT-Delhi Research Intern, Human-Centered Design

Jun 2019 – Present

- Researched under Dr. Aman Parnami to conceptualize an authoring tool for enabling digital storytelling experiences.
- Developed a block-based programming interface from scratch coupled with a storytelling mode that captures reading modalities such as speech, expression, and gestures using vanilla Javascript, Firebase (as a real-time database).
- Planned and conducted user studies for evaluating the tool's usability. Research contributions submitted as a paper for CHI 2020.

### CHILI Lab, Ecole polytechnique fédérale de Lausanne (EPFL) UX Engineer

Aug 2019 – Dec 2019

- Collaborated remotely on developing 'FROG' – a platform to simplify complex technology-enhanced learning scenarios for teachers and students using React.
- Re-designed and re-implemented the user interface and experience for existing functionalities to promote a simplified, intuitive layout. Enabled the tool to be used in real classroom sessions at EPFL for conducting web-based collaborative activities.
- Developed new features such as templating and cloning of sessions to improve the orchestration process for teachers.

### Mastercard Summer Intern, ML Engineer

Jun 2018 - Jul 2018

- Predicted customer purchase behaviour for a dataset of 9 million cardholders based on their transaction history using recurrent neural networks (LSTM) in Python, Tensorflow, and Keras. Presented the model to the analytics team at Mastercard's Headquarters in Purchase, NY for development and adoption in future processes.
- Designed and deployed, in a team of 5, an internal platform to overcome challenges with bulletin reports management between verticals. Streamlined the collaboration process by analysing user personas, creating journey maps, storyboards.
- Prototyped a platform to run machine learning algorithms to predict outcomes for merchant ad campaigns using Angular 6.
- Filed and received **two patents** during the internship period.

### Wingify Summer Intern, Frontend Developer

Jun 2016 - Jul 2016

- Designed and developed for Visual Website Optimizer (VWO) – an A/B testing tool used by clients like eBay, Target, Ubisoft.
- Developed the chrome extension (4k+ downloads) being used to provide a compact, accessible version of the UI for A/B testing.
- Designed, implemented navigation panels and tutorials to improve the usability of the newly launched features in the web app.

## Research & Publications

### POSTER

Saini, A, Mathur, K, **Thukral, A**, Singhal, N, Parnami, A (2019). **Aesop: Authoring Engaging Digital Storytelling Experiences**

*With the advancements in technology, storytelling experiences have been augmented with the help of digital media to be more engaging and immersive. Authoring these scenarios, however, is complicated as it requires technical knowledge to interface the means of engagement. Aesop is a block-based interface system which assists the narrator to author engaging storytelling experiences. Presented at the 32nd User Interface Software and Technology Symposium (UIST) 2019 in New Orleans, LA, USA.*

### TECHNICAL REPORTS

**Thukral, A, Goyal, V, Indu, S (2019). Wearable Technology for Posture Analysis & Correction**

*Posture analysis finds important applications in bio-medical studies, healthcare and workplaces. Improper posture has been demonstrated as a contributor to lower back pain (LBP) and neck and shoulder pain (NSP). We developed a non-intrusive wearable device to accurately estimate and monitor a user's posture. The device is equipped with Wi-Fi capability, enabling it to send smart notifications on ubiquitous devices to correct improper postures when detected by a neural network model.*

**Thukral, A, Goyal, V, Indu, S (2018). Real-time American Sign Language Translation**

*Existing robust technology for real-time sign language translation uses additional devices such as wearable gloves, rings or depth sensor cameras. Our approach enables highly accurate real-time translation using an ordinary webcam. Used neural networks to identify signs and word segmentation to interpret meaningful sentences real-time.*

Sareen, S, Thukral, A, Indu, S (2018). **Classification of Fish Species using Deep Learning based Hybrid Model**  
*Marine biologists rely on fish classification for estimating populations and understanding interaction of fish species. Our proposed deep convolutional networks driven classification algorithm shows an improvement (avg. 17.5%) over existing classification methods including Averaging Ensemble techniques such as Random Forests & Extremely Randomized Trees, Naive Bayes, & HMM.*

## Projects

### Bots at Work: A conversational agent that can write code (Mar, 2019)

Implemented an interactive *virtual personal assistant that can write code* using natural language instructions given to it. The bot takes in speech instructions, responds and translates it to HTML and CSS code rendering websites real-time. Bots at Work assists me in rapid development for freelance work.

### Workaholic: A platform to assist in ergonomic well-being (Jan, 2018)

Designed a web platform to address the health issues related to posture, eyesight, dehydration faced by people who spend long hours working on laptops & desktops. It helps in improving health while maintaining productivity by sending timely, organic reminders as well as guiding the users through various ergonomic activities. Developed in *Vue* and *Node.js*, currently being tested.

### Sixth Sense: Object identification to assist visually impaired individuals (Sep, 2016)

In a team of 4, built a mobile application integrated with Raspberry Pi to assist visually impaired individuals. With one tap on the screen, it scans the surroundings using object detection & face recognition and converts the information to speech. The app also looks for hard obstacles and sharp objects in front of the user and alerts them. Project shared as an open-source contribution.

### Beatdrop: User Interface & Experience Design for a music-based social platform (Sep, 2017)

In a team of 5, conceptualised and designed a social media platform that connects users based on their music interests for a designathon. Surveyed 150 people to learn about user habits, attitude, perception, and intent of use to guide the design process. Created wireframes, low-fi and high-fi prototypes using ProtoPie.

### Videography for International Agro-biodiversity Congress (Nov, 2016)

IAC was an international event organised by the Indian Society of Plant Genetic Resources (ISPGR) and Bioversity International hosting over 900 delegates from 60+ countries. Led the videography team and put together a video for the closing ceremony showcasing the highlights of the conference.

## Leadership

### Co-founder, We Clothe Them

2017 - Present

- Founded an NGO aimed to empower the underprivileged by giving them access to one of the basic needs of survival - clothing. Helped clothe over 4000 people living on streets, shelters, in orphanages and old-age homes, with chapters running in cities like Delhi, Mumbai, Bangalore in India and Melbourne, Australia.
- Received recognition from the Earth Saviours' Foundation and Delhi University.

### Vice President, Round Table DTU

Aug 2017 – Aug 2018

- Led a team of 250 students for an initiative promoting skill development and leadership at Delhi Technological University (DTU).
- Led the *Creative Labs* program to promote applied learning among 200 students sharing unique skill-sets for producing real-world innovative solutions.
- Conducted workshops for undergraduate level students on UI/UX Design, Web Development, and Applied Machine Learning.

## Awards & Recognition

- **First Position** at IIT Delhi's 27 hour hackathon for *Spherical* - a tourism app that provides an *interactive augmented reality* experience while looking for tourist spots, restaurants, monuments, and other locations in a city
- Awarded **Gold Medal** for *8 consecutive years* of *academic excellence* at Delhi Public School Rohini
- **Won over 25 competitions** for web development and design at universities and schools across Delhi NCR and National level.

## Skills

<b>User Experience</b>	Storyboard, Wireframes, User Journeys, Personas, Usability Testing, Prototyping
<b>Software/Design</b>	Photoshop, Sketch, Figma, Adobe XD, Adobe After Effects, InVision
<b>Development</b>	JavaScript, HTML, CSS/SCSS, Angular, React, Vue, Node.js, MongoDB, Arduino
<b>Data Science</b>	Tensorflow, OpenCV, Keras, Numpy, Pandas, Scikit-learn
<b>Programming</b>	Python, C++, MATLAB, VHDL