# Abdul Malik Badshah

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Experienced AI Researcher and Engineer with a strong background in software and manufacturing industries. Specializing in computer vision, machine learning, deep learning, and image processing, I have expertise in fine-tuning large language models (LLMs) for specific applications. My work includes developing computer vision applications for interactive games, enhancing inspection systems in manufacturing lines, and optimizing speech-to-text models for Korean data. I hold a master's degree in Computer Engineering from Sejong University, with a thesis titled "A Study of Hand-Crafted and Deep Features for Speech Emotion Recognition." I am proficient in multiple programming languages including C, C++, Java, C#, and Python, I am also quick to learn and adapt to new technologies.

**Portfolio website: https://ambadshah-portfolio.vercel.app/**

## Experience

**JULY 2019 – PRESENT**
### AI Research Engineer & Developer | Anarchy.io, Seoul, South Korea

- Explored multiple Image processing, machine learning and Deep learning approaches/models for object detection and recognition. Developed Algorithms for computer vision based applications for Mobile devices and Tabs.
  https://factoschule.com/html/main.html **||** https://factoschule.com/html/app.html?tab=1
  factoschule/youtube1 **||** factochule/youtube2
- Developed Interactive Learning Applications for kids and adults in collaboration with ETRI using Augmented Reality with Kinect sensors for skeleton detection, Computer vision for scanning 2D drawings, and Unity Game Engine to transform the scanned 2D drawing into 3D interactable objects.
- Fine-tuned OpenAI Whisper speech to text model to increase accuracy on Korean data and domain-specific applications.
- Enhanced Whisper's inference speed and developed a real-time speech-to-text system for meetings. Additionally, fine-tuned large language models for post-transcription text correction in Whisper.
- Worked on a "Miniature AR" project with ETRI to augment ski-related objects on a miniature mountain in a newly built museum in Nowon-gu.

**AUGUST 2017 – JULY 2019**
### Software Programmer | EslEdu(Anarchy.io), Seoul, South Korea

- Worked on multiple innovative Android projects focused mainly on E-Smart learning including Interactive SMART boards and pens for Educational Purposes https://play.google.com/store/com.anarchy.talkang.
- Developed desktop application integrating Unity and Kinect sensors for human skeleton detection, specializing in child safety protocols for emergencies such as fire and earthquakes.

**SEPTEMBER 2015 – AUGUST 2017**
### Research Assistant | Intelligent Media Lab, Sejong University, Seoul, South Korea
**(Digital contents Research Institute, Sejong University, Republic of Korea)**

- Used Machine learning techniques i.e., SVM-Support Vector Machines, Random Forest, and Decision trees to spot Emotions in Speeches.
- Used Deep Learning CNN (Convolutional Neural Networks) for Speech Emotion Recognition to further enhance the results.
- Tested and compared both Traditional and deep learning-based approaches for telephonic speech analysis, gender recognition, and age estimation from speech signals.
- Validated the mentioned approaches and successfully published them in a few conference proceedings and recognized scientific journals that are cited by hundreds to date.
- Partially Worked on OLAP-Online analytical processing software – C# with XML

OCT 2013 – AUGUST 2015

**Software Developer (Gameplay Programmer) Unity | Pentaloop Inc.**

AUGUST 2013 – MARCH 2014

**Software Developer (Gameplay Programmer) | HalfBytes Studios**

**Responsibilities:**

- Gameplay Programming (C#): Physics, AI, Rendering, Android optimization (Draw Calls). Tools development (Editor Classes). Scene editing and level Building
- Developed UI's based on designer specifications.
- Constructed solutions to unforeseen design problems in a timely manner.

# Education

AUGUST 2017

**Masters of Engineering (Computer Science) | CGPA 4.14 / 4.5**

Digital Contents Research Institute, Sejong University, Seoul, South Korea

Dissertation title: "A Study of Hand-Crafted and Deep Features for Speech Emotion Recognition"

AUGUST 2013

**Bachelor's Degree in Computer Science | CGPA 3.90 / 4**

Islamia College Peshawar, KPK, Pakistan

Graduation Project: "2d Android Game with native language i.e. Java, with eclipse Ide"

# Publications

Badshah, Abdul Malik, et al. "Speech emotion recognition from spectrograms with deep convolutional neural network." 2017 international conference on platform technology and service (PlatCon). IEEE, 2017. **[Cited by 444]**

Badshah, Abdul Malik, et al. "Deep features-based speech emotion recognition for smart affective services." Multimedia Tools and Applications (2017): 1-19. **[Cited by 176]**

Badshah, Abdul Malik, et al. "Divide-and-conquer based ensemble to spot emotions in speech using MFCC and random forest." arXiv preprint arXiv:1610.01382 (2016).

https://www.researchgate.net/publication/338094197_A_Study_of_Hand_Crafted_and_Deep_Features_for_Speech_Emotion_Recognition

# Skills & Areas of Interest

- Image Processing, Computer Vision
- Augmented Reality
- Application Development
- Research & Development
- Machine Learning / Deep Learning
- Speech Emotion Recognition
- Natural Language Processing
- Game Development / Educational Games

# Tools & Technologies

- C, C++, C#, Java, Python
- Unity3D, OpenCv, Kinect - AR
- Android Studio, Visual Studio
- Matlab, Tensor Flow, Caffee, Weka, PyTorch

# Achievements

- Our computer vision-based Smart Games got second position in All Korea innovative games.
- A game I developed **"Mind your Path-Mouse Puzzle"** stood runners up in All Pakistan djuice Opportunity 2014 supported by Microsoft
- **Microsoft Student Partner, July 2012 – July 2013** Microsoft Pakistan.
- Secured 2nd position- a **silver medal** for the degree Bachelor's in Computer Science Department of Computer Science Islamia College Peshawar
- Got 1st position at Nisar Shaheed Degree College in HSC (Computer Science department)