ABHIJEET SANDIP PACHPUTE

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Education

University of Utah *August 2024 - May 2026*
Master of Science in Computer Science
Relevant Coursework: Manage Data with ML (CS 6964), Deep Learning (CS 6353), Security & Privacy (CS 6495)

University of Pune *July 2019 - May 2023*
Bachelor of Engineering in Computer Engineering
Relevant Coursework: Object-Oriented Programming, Database Management, Data Structures & Algorithms, ML

- **Activities & Societies**: Co-founder & **Vice President of Meraki**, Member of Research & Innovation Cell, **ACE** (Association of Computer Engineer's), Learned Japanese as hobby in university's foreign language program.
- **Achievements**: Published **3 Indian Patents & 2 IEEE papers**, 1st runner up at Innovation Thinking & Ideation Competition, Conducted 'Cyber Threats & Security Measures Awareness Program' at **Pune Cyber Police Cell**, Earned Certificate & Diploma in **Japanese language** from university's foreign language department.

Experience

Software Developer *July 2023 - February 2024*
eWarranty Solutions | Internship *Pune, India*
- Developed a large-scale **QR code-based warranty verification** system using Java, Spring Boot, and **RESTful APIs**, streamlining workflows for over **50,000** products and cutting manual errors by 30%.
- Engineered **real-time analytics dashboard** with Spring Boot, JavaScript, MySQL, and integrated **CompletableFuture** API for asynchronous data retrieval, enabling manufacturers to make better warranty decisions.
- Enhanced backend performance by optimizing database queries, **API workflows**, & system architecture with MySQL, SpringBoot & HikariCP connection pooling, achieving a 40% reduction in response times & ensuring scalability.

Research Assistant | Research & Innovation Cell *May 2022 - July 2023*
RMD Sinhgad | University of Pune *Pune, India*
- Conducted **literature reviews** and synthesized existing research to assist in the development of **research methodologies** and **experimental designs.**
- Provided **statistical analysis training** to students, improving research accuracy by 60%, leading to **multiple conference publications** and **patents**.
- Assisted in **survey design, data collection, and analysis**, contributing to **peer-reviewed research publications** and **patent** documentation.

Research Projects

TASA | *Python, HOG, OpenCV, CNN, Raspberry Pi, MongoDB*
- Created TASA (Trusted Assistant with Secure Access), a **real-time face recognition** system using CNN and HOG, addressing security concerns and achieving **90%** authentication accuracy, applying **quantitative analysis techniques** for performance validation.
- Designed a **multilevel user authentication** system, increasing user trust and setting a new standard for secure access in intelligent virtual assistants.

Image-Dev | *Python, GAN, TF-IDF, CNN, AWS, MySQL, Diffusion*
- Engineered an advanced text-to-image AI model to address challenges in **conflict-category image generation**, achieving **93%** contextual relevance by implementing a **hybrid TF-IDF** and preposition-based approach.
- Implemented an advanced **diffusion-based pipeline** combined with upscaling techniques, enabling the generation of **high-resolution** 1024x1024 photorealistic and artistic images with minimal computational overhead.

Safety H-Shield | *Arudino, C++, GSM, BLE, AWS IoT*
- Engineered an **wearable safety device** that enables rapid distress signaling via a **button-controlled** system, reducing emergency response time by 50% compared to existing methods.
- Developed and optimized **real-time alert** mechanisms by integrating IoT-based communication and **GPS tracking**, ensuring precise location-sharing for emergency responders.

Patents and Publications

(Patent) TASA: Virtual Assistant With Face Authentication | *(202221066577)*

(Patent) Safety H-Shield: Women Safety Wearable Device | *(202221048969)*

(Research Paper) TASA: Virtual AI Assistant with Multilevel Authentication | *ICCUBEA 2023*

(Research Paper) Image-Dev: An Advance Text to Image AI Model | *PuneCon 2022*

Honors and Awards

- **Best Innovator & Best Cybersecurity Expert**— Awarded by Department of Computer Engineering RMDSSOE
- **Smart India Hackathon** (SIH) 2022 **Finalist** (SIH1019)
- Presented **TASA** at **ICCUBEA-2023** IEEE international conference (58933)
- Presented **Image-Dev** at **PuneCon-2022** IEEE Pune Section International Conference
- Participated in **InnoFest Summit** 2022 aimed at promoting Innovation and Ideation in new enterprise ecosystems
- **I2E** (Idea to Enterprise) **Cluster Level** Competition, **Finalist** from Top 100 team's across state
- **First** Runner Up at **Innovation Thinking & Ideation Competition**, Selected for Cluster Level round
- Conducted **Cyber Threats & Security Measures Awareness Program** at Pune Cyber Police Cell

Skills

Programming Languages: Java, JavaScript (ES6+), Python, C++, HTML5, CSS3, SCSS, TypeScript
Frontend Technologies: React.js, HTML5, CSS3, SCSS, Bootstrap, Tailwind CSS, Responsive Design
Backend Technologies & Databases: Node.js, Express.js, Spring Boot, RESTful APIs, MySQL, MongoDB, PostgreSQL
Research & Statistical Tools: SPSS, Stata, Excel, Qualtrics
Libraries & Tools: PyTorch, NumPy, Pandas, Scikit-Learn, OpenCV, TensorFlow, CNN, GAN, Cocoa, Raylib, OpenGL