TANMAY RAJESH MACHKAR

SOFTWARE ENGINEER | BE IN CS @ SPPU MESWCOE

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Portfolio

Currently pursuing a Bachelor of Engineering (BE) at Savitribai Phule Pune University (SPPU) with a strong focus on blockchain and AI/ML technologies. Experienced in developing decentralized applications (DApps), smart contracts, and ERC-based token platforms using Solidity, Hardhat, and React. Proficient in designing and deploying machine learning and deep learning models, including artistic style transfer with CNNs and full-stack predictive solutions using Flask and React.

Published researcher with hands-on LaTeX experience and a strong foundation in algorithms and problem-solving. Continuously building expertise in deep learning through academic and personal projects, with a passion for bridging blockchain and AI/ML to create innovative, real-world solutions.

SKILLS SUMMARY

- **Languages**: Java, C++, Python, JavaScript, HTML, CSS, Solidity, SQL, LaTeX
- **Frameworks**: ReactJS, NextJs, Pandas, Numpy
- **Databases**: MySQL, PostgreSQL, MongoDB
- **Backend**: ExpressJS, Flask
- **Concepts**: GitHub, Data Structures and Algorithms, RESTful APIs, Smart Contracts, Decentralized Apps (DApps), Data Visualization, Neural Networks, Convolutional Neural Networks (CNNs), Transfer Learning, Style Transfer, Model Deployment (Flask, React), Backpropagation, Hyperparameter Tuning, PyTorch, TensorFlow, Image Classification, Feature Extraction, Loss Functions (Content & Style Loss), GPU Acceleration, and Reproducible Research (LaTeX).

WORK EXPERIENCE

XPERIORA (STARTUP), REMOTE | *Blockchain Development Intern*   April 2025 – July 2025

- Contributed to the development of an ERC-20-based e-commerce token, focusing on smart contract gas optimization and ensuring cost-efficient on-chain operations.
- Designed and maintained automated deployment scripts using tools like Hardhat and Ethers.js, streamlining smart contract testing and mainnet deployment.
- Worked on merging and managing multiple ERC-20 tokens, ensuring seamless integration and compatibility across token variants.
- Collaborated in a fast-paced startup environment with blockchain engineers to test, audit, and optimize smart contracts for performance and security.

PROJECTS

CHAT BUDDY | MISCELLANEOUS

Built a secure, Ethereum-based decentralized chat application using Solidity and Next.js. Users can create accounts, add friends, and chat in real-time, with data securely stored on the blockchain.

- *Tech Stack* - Hardhat, Ethers.js, Web3Modal, Solidity, JavaScript, CSS, Next.js
- *Tools* - MetaMask, Vercel

TOKEN STAKING DAPP | MISCELLANEOUS

Developed a secure Ethereum-based staking platform enabling users to stake, withdraw, and earn rewards on ERC-20 tokens. Encourages token holding while enhancing liquidity and utility.

- *Tech Stack* - Hardhat, Ethers.js, Web3Modal, gh-pages, Solidity, JavaScript, CSS, React.js
- *Tools* - MetaMask, ERC-20 Tokens

AI-POWERED TENNIS MATCH ANALYZER| MISCELLANEOUS

Built a real-time sports analytics system using YOLOv8 and ResNet-50 to track player movement, ball speed, and court geometry from tennis match videos. Extracted actionable metrics such as shot speed, player speed, and rally count with annotated visualizations and scoreboard overlays.

- *Models & Tools* - YOLOv8, fine-tuned YOLO, ResNet-50, PyTorch, Roboflow, Ultralytics
- *Features* - Player/ball tracking, court keypoint mapping, speed metrics, real-time visualization

ARTISTIC STYLE TRANSFER USING ALEXNET| MISCELLANEOUS

Developed a neural style transfer model using a fine-tuned AlexNet in PyTorch to blend content and artistic style from images via layer-wise feature optimization.

- *Tech Stack* - PyTorch, NumPy, Pandas, Seaborn, Matplotlib, Torchvision, Python, Jupyter Notebook
- *Model* - Fine-tuned AlexNet

E-CERTIFICATE | RESEARCH PAPER (SIH 2023)

Built a decentralized platform for issuing, storing, and verifying academic certificates using Ethereum smart contracts, IPFS, and PBKDF2-SHA256 hashing for secure, tamper-proof validation. Designed for use by governments, institutions, and verifiers to enhance transparency and eliminate forgery.

- ○ *Tech Stack* - Hardhat, Ethers, Web3Modal, ghpages
- ○ *Languages used* - Solidity, JavaScript, CSS

CERTIFICATIONS

- ○ Introduction to Cloud Computing with AWS, Azure and GCP – Cloud Shikshak (5 Hours)   Certificate
- ○ Ethereum and Solidity : The Complete Developer's Guide – Stephen Grider (24 hours)   Certificate
- ○ A Deep Understanding of Deep Learning – Mike X Cohen (57.5 hours)   Certificate

PUBLICATION

- ▪ **INDIAN SOCIETY FOR TECHNICAL EDUCATION**
  Online Blockchain Based Certificate Validation System for Government Organization (Vol. 47)   ISTE OCT-DEC 2024

EDUCATION

BE in Computer Science | Savitribai Phule Pune University, Pune   September 2022 – Present
First Year CGPA: 9.18
Second Year CGPA: 9.05
Third Year CGPA: 9.17
Fourth Year CGPA: *Ongoing*

PERSONAL DETAILS

D.O.B. - 12.02.2003
Gender - Male
Languages - English, Marathi, Hindi
Place of residence - Dhanori, Pune