Abhishek Singh Dhadwal

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Professional Summary

Biomedical informatics researcher and AI-driven healthcare engineer dedicated to creating privacy-preserving clinical decision support systems and innovative data-driven applications in mental health and accessibility.

Core Competencies and Technical Skills

- **Healthcare Informatics and Clinical Decision Support**: Clinical Quality Language (CQL), patient data segmentation, privacy frameworks, FHIR, HAPI-FHIR, Mobile Health and Computing
- **Artificial Intelligence and Machine Learning**: TensorFlow, Scikit-Learn, OpenCV, deep learning architectures, LangGraph, AgNo, multimodal machine learning
- **Software and Systems Development**: Python, Java, C#, TypeScript, REST, Git, PostgreSQL, OracleDB, Kotline
- **Data Analytics and Visualization**: Pandas, SQL, Tableau, D3.js, Excel
- **Leadership and Global Engagement**: Mentorship initiatives, interdisciplinary collaboration, community outreach

Education

Arizona State University, Tempe, AZ
Master of Science in Computer Science, Biomedical Informatics (2024-2026 - Expected) - CGPA **4.0/4.0**
Research Focus: Data-driven clinical decision support, medical privacy frameworks, healthcare policy

International Institute of Information Technology, Bangalore, India
Executive Post Graduate Program in Data Science (2023-2024) - CGPA **3.7/4.0**
Focus: Machine learning, data analytics, Generative AI

Visvesvaraya National Institute of Technology, Nagpur, India
Bachelor of Technology in Computer Science and Engineering (2017-2021) - CGPA 3.5/4.0 - Major - **3.81/4.0**
Ranked in the top 0.3 percent of 1.18 million JEE-MAINS applicants; Early research in computational psychiatry

Research and Professional Experience

Graduate Student Researcher, SHARES Lab, Arizona State University, Tempe, AZ (Aug 2024 to Present)

- Developing AI-powered clinical decision support models that automate patient data segmentation and enhance privacy for individuals with substance use disorders
- Integrating Clinical Quality Language into physician-driven data models that are influencing healthcare policy
- Collaborating with clinicians, policymakers, and interdisciplinary teams to solve real-world healthcare challenges

Undergraduate Researcher, Computational Psychiatry, VNIT Nagpur, India (Jan 2020 to Jan 2022)

- Developed a novel depression detection model using smartphone behavior, audio-visual cues, and patient health surveys (PHQ-9)
- Collaborated with a diverse team of psychology experts and computer science researchers to create a multimodal diagnostic framework
- Published research in Springer and SCIE journals; work has received over 50 citations globally

Exempt Non-Officer, Investment Banking Technology, Credit Suisse, Pune, India (Jul 2023 to Jun 2024)

- Designed features for global trading algorithms and order management platforms (for stocks,futures and options) to ensure regulatory compliance and operational excellence for EMEA and US regions
- Managed deployments and modifications of trading services, including short sell order locators, compliance systems, and administrative applications. Oversaw 85+ production-level changes (RFCs) over two years, demonstrating expertise in C# and WinForms development alongside database management in Sybase and Oracle
- Founded a mentorship program for underrepresented STEM professionals and earned two RAVE awards for leadership and innovation

Technical Analyst, Credit Suisse Business Analytics, Mumbai, India (Jul 2021 to Jun 2023)

- Designed and optimized daily ETL (Extract, Transform, and Load) pipelines that reduced processing time by 70 percent, enhancing global data-driven decision-making

Software Developer, Google Summer of Code, Apache Software Foundation (May 2019 to July 2019)

- Enhanced open source cryptographic algorithms for Apache Commons by integrating advanced pseudorandom number generators used by thousands of developers

Key Projects and Innovations

AI-Driven Indian Sign Language Translator

- Developed an open-source ISL translator using YOLO-v3 for real-time gesture recognition to assist non-verbal patients. Constructed a standardized ISL dataset in challenging real-world conditions; the project now averages over 100 downloads globally each year

SHARES-CLI

- Developed a command-line interface to support Clinical Quality Language (CQL) operations on HAPI-FHIR servers, enabling conversion of CQL files to base64 strings, creation of FHIR bundles, and streamlined posting of data to FHIR endpoints

Sharpnr – AI-Powered Academic Assistant

- Developed a privacy-first AI Agent that aggregates academic updates from Canvas, Slack and Google Calendar to deliver smart notifications, lecture summaries, and personalized VARK-based study plans, using multi-agent workflows with Python (FastAPI), React/Next.js, and MongoDB to secure 4th place in the Agentic AI in Education Hackathon at ASU.

MRI Style Transfer with CycleGAN

- Developed a CycleGAN-based model using Python and TensorFlow to generate T2-weighted MRI images from T1 scans. Handled unpaired datasets, applied image augmentation, and implemented custom loss functions. The approach offers a cost-effective method to augment medical imaging data and support improved diagnostic accuracy

SHARES Clinical Decision Support Engine

- Engineering synthetic patient data generation and AI models using Clinical Quality Language to automate clinical decision support and enforce robust privacy measures

Publications

- Thati Ravi Prasad, Abhishek Singh Dhadwal, Praveen Kumar, and Sainaba. "*A novel multi-modal depression detection approach based on mobile crowdsensing and task-based mechanisms.*" Multimedia Tools and Applications: 1-34
- Thati Ravi Prasad, Abhishek Singh Dhadwal, Praveen Kumar, and Sainaba. "*Multimodal Depression Detection: Using Fusion Strategies with Smart Phone Usage and Audio-Visual Behaviour*" International Journal on Artificial Intelligence Tools 2023 32:02

Awards and Recognitions

- Elemental Member, American Association for the Advancement of Science (AAAS) - Neuroscience (2025 to present)
- NIH-Funded Biomedical Informatics Researcher (2024)
- RAVE (Recognizing Value and Excellence) Award recipient at Credit Suisse (2022)

Leadership and Community Engagement

- **STEM Mentorship and Diversity Advocacy**: Co-founded a global mentorship program at Credit Suisse to empower underrepresented STEM professionals
- **CSR and Community Outreach**: Led career guidance initiatives with the Antarang Foundation to support at-risk youth in technology careers
- **Technical Advocacy and Content Development** Led STEM engagement initiatives for Credit Suisse's Global Coding Challenges and edited the TA newsletter (2021-22), recognized as "exceptional" by global management

Certifications and Online Learning

- **Machine Learning** – Stanford University (Coursera) *Instructor*: Dr. Andrew Ng *Topics*: Linear regression, logistic regression, neural networks, ML system design, dimensionality reduction using Principal Component Analysis
- **Complete Python Bootcamp** – Udemy *Instructor*: Mr. Jose Portilla *Topics*: Python syntax, data structures, object-oriented programming, file handling, and library utilization
- **Data Analysis using Excel and Tableau** – EntryLevel *Instructor*: Mr. Nabeel Siddiqui *Topics*: Data collection, cleaning, in-depth analysis using formulas, pivot tables, root cause analysis, and Tableau for impactful visualizations
- **Introduction to Psychology** – Yale University (Coursera) *Instructor*: Dr. Paul Bloom *Topics*: Neuroscience, human variation, personality, language acquisition, cognitive and social psychology, developmental psychology