BHARATH CHANDRA VADDARAM

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SUMMARY

Biomedical engineer specializing in Human Factors and User Research, integrating user-centered design and sports science. Applies diverse domain knowledge across healthcare, sports, and product development to drive innovation. Swiftly masters new domains, conducts mixed-methods research, and translates findings into actionable insights, excelling in cross-functional collaboration.

PROFESSIONAL EXPERIENCE

Associate Researcher (Data Analyst), Adidas - Center for Engagement Science, ASU   **August 2023 – Present**

- Improved Adidas insole design by leading human factors research and mixed-methods user research, resulting in a 34% reduction in mediolateral sway, significantly enhancing balance for individuals with neuromotor disorders.
- Adapted cognitive and gait assessment techniques for footwear research, revealing textured insoles improved cognitive response time by 4.5% and gait adaptability by 6% during running tests, informing design decisions to enhance athletic performance.
- Implemented a systematic approach correlating user perception of insole textures with performance metrics using a rating scale, incorporating feedback to identify optimal texture levels balancing comfort and performance for future designs.
- Ensured research integrity and global relevance by implementing inclusive participant screening strategies across 20+ user studies, crucial for developing products that meet and benefit diverse user needs across various demographics and regions.
- Influenced Adidas management decisions by presenting compelling research findings on textured insoles, demonstrating their potential benefits for athletic performance, balance, and cognitive function in future shoe designs.

Biomedical Intern, SVIMS Hospital   **June 2022 – September 2022**

- Optimized equipment longevity and reduced downtime by 30% through strategic maintenance scheduling and meticulous record management, ensuring uninterrupted patient care and minimizing costly repairs.
- Provided comprehensive training to 10+ healthcare professionals on the effective utilization of medical equipment, resulting in a 25% increase in user confidence and a 20% reduction in user errors, ultimately enhancing patient safety.

Research Assistant, ANTs Research Group, SRM IST   **June 2021 – May 2022**

- Led development of novel iron oxide nanoparticle-hyaluronic acid (HA-IONP) gel system for cancer hyperthermia treatment, achieving 48°C under RF exposure and 26% greater cytotoxicity versus controls.
- Engineered low-cost fluorescence microscopy system achieving comparable image quality to high-end microscopes at 10% of the cost, expanding access to advanced bio-imaging capabilities.
- Presented poster and was selected for paper publication under Springer Nature's ICNOC-2022 Conference Proceedings.

ACADEMIC PROJECTS

Assessing Cognitive Performance with Varying Insole Textures   **March 2024 – Present**

- Conceptualized and led a pioneering study on the impact of textured insoles on gait, cognition, and balance, developing a comprehensive framework for assessing insole effects during dynamic activities, including athletic and everyday movements.
- Discovered a threshold effect in insole texture that optimizes both comfort and performance through spatial memory tasks and gait analysis, revealing new insights into the relationship between insole design and cognitive-motor integration.
- Integrated quantitative movement data with qualitative user feedback, leveraging a multi-modal approach and advanced data visualization techniques in Python to uncover insights on the relationships between insole design and cognitive load.
- Presented research findings to Adidas senior sports management, highlighting key insights and future research directions, including plans to increase the sample size and explore the application of ML algorithms to design optimal insole patterns.

SKILLS & COMPETENCIES

Research Methodology: User-Centered Design, Mixed-Methods Research, Data Analysis & Visualization
Human Factors & UX : Human-Computer Interaction, Cognitive Science, Ergonomics, Product Comfort & Fit Assessment
Technical Skills: Python, MATLAB, CAD (SolidWorks, AutoCAD), Statistical Software (Minitab, OriginPro)
Professional Skills: Cross-Functional Collaboration, Rapid Adaptive Learning, Problem Solving, Insight Translation

EDUCATION

Master's in Biomedical Engineering   **December 2024**
Arizona State University (ASU), Tempe, AZ   GPA: 3.68/4.0

   Relevant Coursework: Wearable Devices, Applied Computational Behavioral Sciences

Bachelor's in Electronics and Communication Engineering - Biomedical Engineering   **May 2022**
SRM Institute of Science and Technology (SRM IST), Chennai, India   GPA: 3.42/4.0

   Relevant Coursework: Biomechanics, Biology: Human Anatomy and Physiology

CERTIFICATIONS

- Human Factors & Usability Engineering: Designing for Humans Specialization - Arizona State University
- GCP for Clinical Trials with Investigational Drugs and Medical Devices (U.S. FDA Focus) - CITI Program
- Statistics with Python Specialization - University of Michigan