

Jacob (Hanjie) Shen

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Location: Seattle, WA

EXPERIENCE

- SonderMind**
Senior Applied Scientist

Remote/Denver, CO
Mar 2023 - Present

 - Researched and deployed advanced Machine Learning (ML) algorithms to enhance Behavioral Healthcare Technology Services, leading to the implementation of personalized, measurement-based care frameworks.
 - Led a project utilizing GPT-4 with a custom reinforcement learning framework to optimize online advertising and paid search strategies, achieving a 35% increase in marketing ROI through optimized ad placements and keyword bidding strategies.
 - Developed and deployed a client-provider recommendation system leveraging collaborative filtering and NLP techniques to match patients with therapists based on historical success rates and personal preferences, resulting in a 25% improvement in initial therapy session success rates.
 - Pioneered the development of tooling for continuous, reproducible, and automated deployment of ML models and services via AWS, employing CI/CD pipelines, Docker containers, and Kubernetes for scalable and efficient ML operations.
- Mindstrong** (acquired by SonderMind)
Senior Applied Scientist

Remote/San Francisco, CA
May 2022 - Mar 2023

 - Developed a cutting-edge personalized recommendation system for optimizing the content library based on patient clinical symptom profiles using clustering and collaborative filtering techniques.
 - Developed a robust anomaly detection framework utilizing time-series analysis and deep learning to enhance the monitoring of patients' smartphone usage data and improve therapy efficiency.
 - Designed and deployed a Model-Assisted Behavioral Healthcare system, integrating predictive models with clinical decision-making processes to enhance session efficiency and patient triage.
- Fred Hutchinson Cancer Center**
Senior Research Statistician

Seattle, WA
Nov 2018 - Apr 2022

 - Led the application of advanced statistical and machine learning techniques to longitudinally assess patient data from clinical trials, fitness tracking data, and electronic health records, improved patient outcome prediction accuracy.
 - Developed automated machine learning pipelines for robust data preprocessing and feature extraction, facilitating the lab's transition from purely experimental research to incorporating computational techniques.
 - Conducted survival analysis using Cox proportional hazards models to identify significant predictors of patient outcomes, resulting in the publication of high-impact research papers.
- UC San Diego Health**
Statistician / Research Manager

La Jolla, CA
Sep 2015 - Oct 2018

 - Headed the statistics unit within the Head & Neck Clinical and Translational Research Lab, driving the strategic application of statistical analyses in clinical research, resulting in the publication of research papers.
 - Implemented machine learning algorithms and data visualization techniques using R and Python to analyze medical image data and large-scale clinical trial data, yielding critical insights for clinical decision-making, leading to the improvement in treatment plans.
 - Authored research manuscripts and effectively communicated complex statistical findings to a diverse range of stakeholders, enhancing the impact and reach of research outcomes.

EDUCATION

- University of California San Diego**
M.S. in Statistics / Ph.D. in Biostatistics (not completed)

La Jolla, CA
2018
- Xiamen University**
B.S. in Computational Mathematics

Xiamen, China
2013

SKILLS

- **Languages & Tools:** Python, R, SQL, Java, Bash, AWS (SageMaker, EC2), PyTorch, Tensorflow, Docker, Kubernetes, Git/Github
- **Expertise:** Experimental Methods (Hypothesis Testing, Multi-Armed Bandit), Bayesian Statistics, Reinforcement Learning, Deep Learning, Anomaly Detection, NLP

PUBLICATIONS

- Knights J, **Shen H** et al. **Association of Smartphone Usage Patterns with Sleep and Mental Health Symptoms in a Clinical Cohort Receiving Virtual Behavioral Care: A Retrospective Study.** *SLEEP Advances*, zpad027, 2023.
- Knights J, Bangieva V, Passoni M, Donegan M, **Shen H** et al. **A Framework for Precision "Dosing" of Mental Healthcare Services: Algorithm Development and Clinical Pilot.** *International Journal of Mental Health Systems*, 17(1), 21, 2023.
- Ueland K, Sanchez SC, Rillamas-Sun E, **Shen H** et al. **A Digital Health Intervention to Improve Nutrition and Physical Activity in Breast Cancer Survivors: Rationale and Design of the Cook and Move for Your Life pilot and Feasibility Randomized Controlled Trial.** *Contemporary Clinical Trials*, 123, p.106993, 2022.
- Kwan ML, Cheng RK, Iribarren C, **Shen H** et al. **Risk of Heart Failure with Preserved versus Reduced Ejection Fraction in Women with Breast Cancer.** *Breast Cancer Research and Treatment*, 1-7, 2022.
- Marín-Chollom AM, Hale C, Koch P, Gaffney AO, Contento I, **Shen H** et al. **Cognitive Functioning and Health in Hispanic/Latina Breast Cancer Survivors.** *Journal of Immigrant and Minority Health*, 1-8, 2021.
- Zakeri K et al. (including **Shen H**). **Predictive Classifier for Intensive Treatment of Head and Neck Cancer.** *Cancer*, 126(24), 5263-5273, 2020.
- **Shen H**, Jeong JH, Mell LK. **Proportional Relative Hazards Model for Competing Risks Data.** *medRxiv*, 2020.
- Vitzthum LK, Park H, Zakeri K, Bryant AK, Feng C, **Shen H** et al. **Selection of Head and Neck Cancer Patients for Intensive Therapy.** *International Journal of Radiation Oncology* Biology* Physics*, 106(1), 157-166, 2020.
- Mell LK, **Shen H** et al. **Nomogram to Predict the Benefit of Intensive Treatment for Locoregionally Advanced Head and Neck Cancer.** *Clinical Cancer Research*, 25(23), 7078-7088, 2019.
- Park A, Alabaster A, **Shen H** et al. **Undertreatment of Women with Locoregionally Advanced Head and Neck Cancer.** *Cancer*, 125(17), 3033-3039, 2019.
- Green G, Kim E, Carmona R, **Shen H** et al. **Incidence of Long-Term Esophageal Dilation With Various Treatment Approaches in the Older Head and Neck Cancer Population.** *Frontiers in oncology*, 8, 466, 2018.
- Zakeri K et al. (including **Shen H**). **Predictor of Effectiveness of Treatment Intensification on Overall Survival in Head and Neck Cancer (HNC).** *Annals of Oncology*, 29, viii375-viii376, 2018.
- Vitzthum LK et al. (including **Shen H**). **Comparison of Comorbidity and Frailty Indices in Patients with Head and Neck Cancer Using an Online Tool.** *JCO clinical cancer informatics*, 2, 1-9, 2018.
- Bryant AK, Vitzthum LK, Zakeri K, **Shen H** et al. **Prognostic Role of p16 in Non-oro-pharyngeal Head and Neck Cancer.** *International Journal of Radiation Oncology* Biology* Physics*, 100(5), 1319, 2018.
- Zakeri K, Panjwani N, Carmona R, **Shen H** et al. **Generalized Competing Event Models Can Reduce Cost and Duration of Cancer Clinical Trials.** *JCO Clinical Cancer Informatics*, 2, 1-12, 2018.
- Mell LK, Zhang Q, **Shen H** et al. **Generalized Competing Event Regression to Stratify Head and Neck Cancer Patients: Secondary Analysis of NRG Oncology RTOG 9003, 0129, and 0522.** *International Journal of Radiation Oncology* Biology* Physics*, 99(2), S236-S237, 2017.
- Vitzthum LK, Noticewala SS, Hines P, Zakeri K, Nguyen C, **Shen H** et al. **A Web-Based Tool to Compare Comorbidity Models and Geriatric Risk-Assessment in Head and Neck Cancer Patients.** *International Journal of Radiation Oncology* Biology* Physics*, 99(2), E379, 2017.
- Carmona R et al. (including **Shen H**) **Improved Method to Stratify Elderly Patients With Cancer at Risk for Competing Events.** *Journal of Clinical Oncology*, 34(11), 1270-1277, 2016.