

Jacob (Hanjie) Shen

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EXPERIENCE

- **SonderMind** Remote/Denver, CO
Senior Applied Statistician, Applied Science Team
Mar 2023 - Present
 - Develop and deploy a state-of-the-art dynamic model to enhance behavioral healthcare technology services. This model enabled clinicians to utilize measurement-based care (MBC) insights in real-time.
 - Employ ML and Bayesian models to unravel temporal dynamics between treatment strategies, patient engagement, contextual variables, and mental health outcomes.
- **Mindstrong Health** (acquired by SonderMind) Remote/San Francisco, CA
Senior Applied Statistician, Applied Science Team
May 2022 - Mar 2023
 - Developed a personalized recommender system leveraging matrix factorization. Introduced a novel Individual Correction Index (ICI) through a statistical approach, enhancing recommendations by factoring in patient clinical symptom profiles.
 - Developed an anomaly detection framework using a mix of classical statistical methods and ML algorithms. This approach ensured robustness in monitoring patients' smartphone usage data, and further enhancing clinical therapy efficiency.
 - Optimized preventative and interventional treatments by employing a blend of traditional statistical models and ML algorithms. Worked extensively with generalized linear models, decision trees, and neural networks to predict patient behaviors.
- **Fred Hutchinson Cancer Center** Seattle, WA
Senior Statistician
Nov 2018 - Apr 2022
 - Employed robust statistical and machine learning methodologies to analyze complex fitness tracking data and Electronic Health Record (EHR) data for cancer survivors.
 - Spearheaded protocol development, experimental design, manuscript drafting, and data management efforts.
- **UC San Diego Health** La Jolla, CA
Statistician/Biostatistics Manager
Sep 2015 - Oct 2018
 - Led the statistics unit within the Head & Neck Clinical and Translational Research Lab.
 - Employed machine learning algorithms and data visualization tools to analyze medical image data, large-scale clinical trials, and clinical observational data.
 - Drafted manuscripts and communicated research findings to a broad spectrum of stakeholders.

EDUCATION

- **University of California San Diego** La Jolla, CA
M.S. in Statistics / Ph.D. in Biostatistics (not completed)
Sep 2013 - Mar 2018
- **Xiamen University** Xiamen, China
B.S. in Computational Mathematics
Sept 2009 - Jun 2013

PROGRAMMING SKILLS

- **Principal Languages:** Python, SQL, Java, R, Matlab
- **Tools/Frameworks:** Databricks, AWS (EC2, SageMaker), R Shiny, Jupyter, Git/Github
- **Specialization:** Experimental Design, Bayesian Methods, Longitudinal Data Analysis, Machine Learning/Deep Learning (scikit-learn, TensorFlow, PyTorch, etc), Data Visualization (ggplot2, Matplotlib, Seaborn, etc)

- 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.