JACOB (HANJIE) SHEN

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CORE COMPETENCIES

- Machine Learning
- Predictive Modeling
- High-Dimensional Data Analysis
- Image Segmentation
- Statistical Computing
- Data Management

EDUCATION

M.S. Statistics   **Sep. 2013 - Mar. 2015**
University of California San Diego, La Jolla, CA

B.S. Computational Mathematics   **Sep. 2009 - Jun. 2013**
Xiamen University, Xiamen, China

EXPERIENCE

Statistician   **Nov. 2018 - Present**
Fred Hutchinson Cancer Research Center, Seattle, WA
Cancer Prevention Program

- Develop and apply robust machine learning methods to analyze complex, high-dimensional physical activity Fitbit data and large-scale clinical trials.
- Develop novel statistical models, prepare peer-reviewed publications, and present analytical results.
- Lead in protocol development, data management, and data quality control procedures.

Statistical Center for HIV/AIDS Research & Prevention (SCHARP)

- Write statistical analysis plans and provide statistical analysis of project data.
- Develop and evaluate new statistical software and provide statistical consultation for research projects.

Biostatistics Manager   **May. 2018 - Oct. 2018**
UC San Diego Altman Clinical and Translational Research Institute, La Jolla, CA

- Assisted in the management work for Head & Neck Cancer Clinical and Translational Research Lab.
- Applied state-of-the-art machine learning and deep learning methods to analyze medical image data, large-scale clinical trials, and observational data.
- Developed and evaluated new predictive models and statistical softwares.
- Prepared manuscripts and presented scientific research results to a wide variety of stakeholders.

Statistician   **Sep. 2015 - Mar. 2018**
UC San Diego Health, La Jolla, CA

- Developed a novel optimized risk-stratification method to assess and predict the risk levels of cancer patients.
- Developed and published a new useful predictive modeling R package ***gcerisk*** to help radiologists stratify cancer patients from low- to high-risk.
- Applied clustering and classification methods to segment liver tumors from medical images (CT/MRI Scans).
- Applied multivariate analyses to identify novel quantitative and qualitative imaging features used in predicting the severity of the liver tumor.
- Applied robust machine learning methods to stratify liver cancer patients with different risk levels.

SKILLS

- **Programming Languages**: Python, R, SQL, SAS, MATLAB
- **Specialization**: Machine Learning and Deep Learning Frameworks (Scikit-Learn, Keras, TensorFlow, ect), Data Visualization (ggplot2, Matplotlib, Seaborn, etc)

PUBLICATIONS

1. Neugebauer RS, **Shen H** *et al.* **Using Marginal Structural Model with Machine Learning Techniques to Examine the Risk of Cardiovascular Disease Following Breast Cancer Treatment: The Pathways Heart Study**. *In preparation*, 2022.

2. **Shen H**, Rillamas-Sun E *et al.* **Risk of Cardiovascular Disease Following Breast Cancer Chemotherapy Drugs: The Pathways Heart Study**. *In preparation*, 2022.

3. Greenlee H *et al.* (including **Shen H**). **Risk of Cardiovascular Disease in Women With and Without Breast Cancer: The Pathways Heart Study**. *Submitted to Journal of Clinical Oncology*, 2021.

4. Kwan ML *et al.* (including **Shen H**). **Risk of Cardiometabolic Risk Factors in Women With and Without a History of Breast Cancer: The Pathways Heart Study**. *Journal of Clinical Oncology*, JCO-21, 2022.

5. 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

6. Zakeri K *et al.* (including **Shen H**). **Predictive Classifier for Intensive Treatment of Head and Neck Cancer**. *Cancer*, 126(24), 5263-5273, 2020.

7. **Shen H**, Jeong JH, Mell LK. **Proportional Relative Hazards Model for Competing Risks Data**. *medRxiv*, 2020.

8. 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

9. 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.

10. Park A, Alabaster A, **Shen H** *et al.* **Undertreatment of Women with Locoregionally Advanced Head and Neck Cancer**. *Cancer*, 125(17), 3033-3039, 2019.

11. 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.

12. 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.

13. 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.

14. Zakeri K, Noticewala SS, Vitzthum LK, Sojourner E, **Shen H** *et al.* **'Optimism bias' in Contemporary National Clinical Trial Network Phase III Trials: Are We Improving?**. *Annals of Oncology*, 29(10), 2135-2139, 2018.

15. Bryant AK, Vitzthum LK, Zakeri K, **Shen H** *et al.* **Prognostic Role of p16 in Non-oropharyngeal Head and Neck Cancer**. *International Journal of Radiation Oncology* Biology* Physics*, 100(5), 1319, 2018.

16. 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.

17. 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.

18. 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.

19. Noticewala SS, Li N, Williamson CW, Hoh CK, **Shen H** *et al.* **Longitudinal Changes in Active Bone Marrow for Cervical Cancer Patients Treated With Concurrent Chemoradiation Therapy**. *International Journal of Radiation Oncology* Biology* Physics*, 97(4), 797-805, 2017.

20. Li N, Noticewala SS, Williamson CW, **Shen H** *et al.* **Feasibility of ATLAS-Based Active Bone Marrow Sparing Intensity Modulated Radiation Therapy for Cervical Cancer**. *Radiotherapy and Oncology*, 123(2), 325-330, 2017.

21. 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.

22. Williamson CW, Green G, Noticewala SS, Li N, **Shen H** *et al.* **Prospective Validation of a High Dimensional Shape Model for Organ Motion in Intact Cervical Cancer**. *International Journal of Radiation Oncology* Biology* Physics*, 96(4), 801-807, 2016.

23. Li N, Noticewala SS, Williamson CW, **Shen H** *et al.* **ATLAS-Based Active Bone Marrow-Sparing Intensity Modulated Radiation Therapy for Cervical Cancer**. *International Journal of Radiation Oncology* Biology* Physics*, 96(2S), S98-S99, 2016.