Chenyuan Li

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PERSONAL STATEMENT

Dr.Chenyuan Li, dual-trained scientist with a PhD in Dental Medicine (Tokyo Medical and Dental University) and ongoing Biomedical Informatics Master's/Postdoc (UTHealth) specializing in healthcare AI. Uniquely positioned to translate deep clinical expertise in sports dentistry and digital dentistry into scalable AI solutions. Led development of the first dental-specific foundation model (BigMouth Project), demonstrating proven ability to bridge clinical workflows with technical implementation. Seeking clinical informaticist or AI product specialist roles where my cross-domain expertise can drive next-generation digital health products that improve patient care through data intelligence.

EDUCATION

Master in Biomedical Informatics ***Aug.2024-Now***

The University of Texas Health Science Center at Houston Texas, United States Houston, USA

Focus on Data Science and AI, Nature Language Processing, Deep Learning, Big Data, Statistical Methods, Digital health

***Ph. D. in Medical and Dental Sciences*, focus on Sports Dentistry**, **minor in Dental Materials Science** **Apr.2020-Mar.2024**

Tokyo Medical and Dental University, Graduate School of Medical and Dental Science Tokyo, Japan

Focused on Sports Dentistry, Advanced Biomaterials, Oral Implantology and Regenerative Dental Medicine, Dental Engineering.

***Research Student* in Maxillofacial Prosthodontics** **Oct.2019-Mar.2020**

Tokyo Medical and Dental University, Graduate School of Medical and Dental Science Tokyo, Japan

Bachelor of Medicine in Stomatology (DDS in Dentistry) **Sep.2014-Jun.2019**

Lishui University, School of Medicine and Health Lishui, China

Received comprehensive training in all specialized areas of dentistry, including Orthodontics and Oral and Maxillofacial Surgery etc... Also built a foundation in Oral Microbiology, Clinical Pharmacology, Medical Immunology, Medical Biology, Biochemistry, and Histoembryology etc…

WORK EXPERIENCES

Graduate Research Assistant (Postdoctoral Fellow appointment starting Dec. 2025) **Aug.2024-Now**

The University of Texas Health Science Center at Houston Texas, United States

- **Dental Foundation Model Development (BigMouth Project)**
  - Spearheaded the development of first dental-specific LLM to address industry pain points in unstructured dental EHR data utilization.
  - Architected clinical-AI translation framework, defining key clinical tasks (periodontitis classification, implant failure prediction) and creating customized dental terminology dictionaries for accurate clinical context understanding.
  - Engineered scalable data pipelines integrating multi-site data from 10+ institutions (>4M records), implementing MedEncoder (BERT-style) and Mamba architectures for temporal learning.
  - Achieved 85% accuracy with strong cross-institutional generalization, demonstrating core technology potential for commercial applications in clinical decision support and automated chart review.
- **AI-Driven Digital Health Analytics**
  - Developed cloud-based sentiment and cognitive classification pipeline using advanced prompt engineering (zero-shot, few-shot, Chain-of-Thought) for automated healthcare text analysis.
  - Applied transfer learning for retinal disease detection (78% accuracy) and conducted cancer subtype classification using BigQuery, identifying distinct patient subgroup patterns.
- **Predictive Modeling & Data Visualization**
  - Built predictive models using PySpark for large-scale data preprocessing and Random Forest training (AUC-ROC >0.85).
  - Designed interactive Tableau dashboards incorporating data visualization best practices for performance monitoring and clinical insight generation.

Part-time Researcher **Apr.2024-Now**

Institute of Science Tokyo Tokyo, Japan

- Supported junior researchers post-graduation on project design, manuscript polishing, and peer-review guidance.

PhD Researcher **Apr.2020-Mar.2024**

Tokyo Medical and Dental University Tokyo, Japan

- Pioneered digital dentistry materials research, leading R&D projects in 3D-printed sports mouthguards and nightguards through design optimization, durability testing, and clinical protocol development.
- Conducted statistical analysis using SPSS and R to evaluate dental polymer safety and performance, applying Design of Experiments (DOE) principles to optimize material formulations.
- Managed end-to-end research projects from conceptualization to publication, contributing to 5 Q1 journal publications in digital dentistry and 3D modeling applications.
- Presented research findings at 10+ international conferences, establishing thought leadership in digital dentistry innovation.

Equity Research Intern **2022.12-2023.12**

Cinda Security Co.Ltd. Shenzhen, China

- Initiated client communication, presented research proposals, and helped identify partnership opportunities with biotech firms.
- Provided strategic investment analysis for healthcare sectors (vaccines, ophthalmology, dental technology), producing 12+ customized reports to support venture capital decisions.
- Identified and evaluated partnership opportunities with biotech firms, presenting research proposals to institutional clients.

Dentist **Jun.2018-Sep.2019**

Zhejiang Hospital Hangzhou, China

- Provided dental care, including restorative procedures, extractions, and assisting in dental implant surgeries.

Research Assistant **Jul.2017-Aug.2017**

Chinese Academy of Sciences Shanghai, China

- In vivo test assistance: Development of luciferase-labeled orthotopic xenograft mouse models for cancer research.

PROJECT EXPERIENCES

Medical Statistics with SPSS, R **| Zhejiang Chinese Medical University** **Mar.2021-Apr.2021**

- Applied statistical principles to analyze data using IBM SPSS and R software.

SKILLS

- Statistical Analysis: R, SPSS, Python, Biostatistics, Regression, Classification, Survival Analysis, Causal Inference
- 3D Design Software: ZBrush, Solidworks, Shapr3D, Materialise, Blender, Exocad
- Data Programming: Big Data Processing: PySpark, Apache Spark, SQL (BigQuery), Data Science & Machine Learning: Scikit-learn, Statsmodels, Pandas, NumPy, Deep Learning: Pytorch, Keras, Transformer, Data Visualization: Tableau, ggplot2, Matplotlib, Seaborn, AI/ML: Pytorch, Transformer, RNN, CNN, Random Forest, encoder architectures, pretraining strategies, and LoRA fine-tuning, model quality evaluation.
- Languages: English (Fluent, TOEIC 800+ similar), Japanese (JLPT N2), Chinese(Native)

AWARD

Scholarship

Michael & Gillian McCord Scholarship Award from UTHealth Houston Aug.2025

Wise Scholarship for support pioneer research initiated by next generation from JST Oct.2021-Mar.2024

Honors Scholarship for students with excellent academic records from JASSO Oct.2020-Mar.2022

Conference

Award of Oral Presentation: Neo Pharmaceutical Industry Award in JASD Nov.2023

PUBLICATIONS

- **Li C**, Wada T, Tsuchida Y, et al. Optimizing additively manufactured mouthguards: An evaluation of multi-layer materials for improved shock absorption and durability compared to conventionally fabricated samples. International Journal of Bioprinting. 2024;10(3)doi:10.36922/ijb.2469
- Aung TK, Churei H, **Li C**, et al. Shock absorption of 3D-printed ABS and fabric for sports faceguard. International Dental Journal. 2021/09/01/ 2021;71:S47-S48. doi.org/10.1016/j.identj.2021.08.041
- Aung TK, Churei H, **Li C**, et al. Air Permeability, Shock Absorption Ability, and Flexural Strength of 3D-Printed Perforated ABS Polymer Sheets with 3D-Knitted Fabric Cushioning for Sports Face Guard Applications. Polymers (Basel). Jun 5 2021;13(11)doi:10.3390/polym13111879
- Gen T, **Li C**, et al. Systematic Review of the Advances and Applications of Digital Dentistry in Sports Mouthguard Fabrication. International Journal of Sports Dentistry 2023
- Churei H, **Li C**, et al. A Literature Review on the Application of 3D Modeling Techniques to Mouthguard Fabrication. International Journal of Sports Dentistry 2023

PRESENTATIONS

- **Chenyuan Li,** Hiroshi Churei, et al. Evaluation of shock absorption in various designed 3D printed samples Evaluation of shock absorption in various designed 3D printed samples. 2024 IADR/ AADOCR/ CADR General Session & Exhibition, New Orleans, USA
- **Chenyuan Li**. Retention force comparison of 3D multiple layer mouthguard and conventional mouthguard via cycle-loading durability fatigue test. The 34th Annual Meeting of the Japanese Academy of Sports Dentistry, Nov 18, 2023, Fukuoka, Japan
- **Chenyuan Li,** Hiroshi Churei, Chang Liu, Qiushuang Zhu, Zequn Li, Gen Tanabe, Toshiaki Ueno.Questionnaire survey on safety awareness for boxers in China. 2022 IADR (100th)/IADR APR(5th)，JUNE 20-25, 2022, Virtual Experience.
- **Chenyuan Li,** Hiroshi Churei, Toshiaki Ueno, et al. Impact absorption and distribution ability of 3D printed mouthguard material in contrasting orientations. The 78th General Session of the Japanese Society for Dental Materials and Devices, Online
- Gen Tanabe, Atsushi Iwaki, **Chenyuan Li,** et al. 3D printing of a shape memory photopolymer device with the use of a virtual articulator that has been designed on the basis of oral scan data and jaw movement data. The 35th Annual Meeting of the Japanese Academy of Sports Dentistry, Oct 12, 2024, Osaka, Japan
- Aung Thida, Hiroshi Churei, **Chenyuan Li,** et al. Simultaneous measurement of salivary pH using sensors at multiple sites. The 35th Annual Meeting of the Japanese Academy of Sports Dentistry, Oct 12, 2024, Osaka, Japan
- Aung Thet Khaing, Hiroshi Churei, **Chenyuan Li,** et al. Shock absorption of 3D-printed ABS and fabric for sports faceguard. FDI 2021World Dental Federation, May 2021, Sydney, Australia
- Yumi Takahashi, Hiroshi Churei, **Chenyuan Li,** et al, Application of custom-made faceguard for professional volleyball player after jaw surgery of surgical orthodontic treatment. The 31st Annual Meeting of the Japanese Academy of Sports Dentistry, Hiroshima & Online
- Shintaro Shimizu, **Chenyuan Li**, Toshiaki Ueno et al. Clarifying the Mechanisms of School Sports Accidents Using Text Mining. The 24th Scientific Meeting of the Japanese Association for Dental Science, Online