



Stephen Ma

Clinical Assistant Professor, Medicine

CLINICAL OFFICE (PRIMARY)

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Bio

BIO

Stephen Ma is a Clinical Assistant Professor in the Division of Hospital Medicine at Stanford University School of Medicine. His undergraduate degree was in Electrical Engineering at Princeton University, after which he pursued his MD/PhD at Columbia University. He then moved to Stanford University for his residency in Internal Medicine and fellowship in Clinical Informatics prior to joining the faculty. His clinical expertise is in the care of adult patients admitted to the inpatient general medicine services.

He is fellowship-trained in clinical informatics with the following areas of focus: 1) the implementation and evaluation of emerging technologies such as ambient AI scribes, 2) clinician-centered analytics and reporting, 3) the development of machine learning algorithms and workflows for standardization of care, and 4) care team communication and on-call scheduling. His overall approach to technology integration into healthcare emphasizes user-centered design, data-driven decision making, and rigorous demonstration of outcomes.

He previously performed his doctoral work in the laboratory of Professor Gordana Vunjak-Novakovic where he developed human cardiac models of disease incorporating patient-derived stem cells, optogenetics, tissue engineering, optoelectronics, and video processing.

CLINICAL FOCUS

- Internal Medicine
- Clinical Informatics
- Machine Learning
- Digital Health

ACADEMIC APPOINTMENTS

- Clinical Assistant Professor, Medicine

HONORS AND AWARDS

- Stanford Pediatrics Fellow Scholarship Award, Stanford University (2023)

- Robert G. Bertsch Prize in Surgery, Columbia University Vagelos College of Physicians and Surgeons (2019)
- Izard Prize in Cardiology, Columbia University Vagelos College of Physicians and Surgeons (2019)
- Ruth L. Kirschstein National Research Service Award (NRSA) Individual Predoctoral Fellowship (F30), NIH (2016)
- Sigma Xi Book Award for Undergraduate Research, Princeton University (2011)

PROFESSIONAL EDUCATION

- Board Certification: Clinical Informatics, American Board of Preventive Medicine (2025)
- Fellowship: Stanford University Clinical Informatics Fellowship (2024) CA
- Board Certification: Internal Medicine, American Board of Internal Medicine (2022)
- Residency: Stanford University Internal Medicine Residency (2022) CA
- Medical Education: Columbia University College of Physicians and Surgeons (2019) NY
- PhD, Columbia University , Biomedical Engineering (2018)
- BSE, Princeton University , Electrical Engineering (2011)

PATENTS

- "United States Patent 11299714 ENGINEERED ADULT-LIKE HUMAN HEART TISSUE", Apr 12, 2022
- "United States Patent 1126143 BIOREACTOR SYSTEM FOR ENGINEERING TISSUES", Mar 1, 2022
- "United States Patent Application 17118766 SYSTEM AND METHODS FOR OPTOGENETIC EVALUATION OF HUMAN NEUROMUSCULAR FUNCTION", Jun 17, 2021

Teaching

GRADUATE AND FELLOWSHIP PROGRAM AFFILIATIONS

- Clinical Informatics (Fellowship Program)

Publications

PUBLICATIONS

- **MedFactEval and MedAgentBrief: A Framework and Workflow for Generating and Evaluating Factual Clinical Summaries.** *Pacific Symposium on Biocomputing. Pacific Symposium on Biocomputing*
Grolleau, F., Alsentzer, E., Keyes, T., Chung, P., Swaminathan, A., Aali, A., Hom, J., Huynh, T., Lew, T., Liang, A., Chu, W., Steele, N., Lin, et al
2026; 31: 388-399
- **Retrieval-Augmented Guardrails for AI-Drafted Patient-Portal Messages: Error Taxonomy Construction and Large-Scale Evaluation.** *Pacific Symposium on Biocomputing. Pacific Symposium on Biocomputing*
Chen, W., Haredasht, F. N., Black, K. C., Grolleau, F., Alsentzer, E., Chen, J. H., Ma, S. P.
2026; 31: 189-204
- **Automated Evaluation of Large Language Model Response Concordance with Human Specialist Responses on Physician-to-Physician eConsult Cases.** *Pacific Symposium on Biocomputing. Pacific Symposium on Biocomputing*
Wu, D. J., Haredasht, F. N., Wu, D., Ravi, V., McCoy, L. G., Weng, Y., Chopra, K., Everett, S. S., Nageeb, G., Chen, W., Ma, S. P., Maharaj, S. K., Tran, et al
2026; 31: 372-387
- **Artificial intelligence translation in healthcare: an urgent call for evidence-informed policy frameworks.** *BMJ health & care informatics*
Anyagbuna, C., Steele, N., Liang, A. S., Ma, S. P., Lopez, I., Chilukuri, N., Patel, K., Schulman, K., Chen, J. H.
2026; 33 (1)
- **Optimizing large language models for detecting symptoms of depression/anxiety in chronic diseases patient communications.** *NPJ digital medicine*
Kim, J., Ma, S. P., Chen, M. L., Galatzer-Levy, I. R., Torous, J., van Roessel, P. J., Sharp, C., Pfeffer, M. A., Rodriguez, C. I., Linos, E., Chen, J. H.

2025; 8 (1): 580

- **Fine-Tuning Methods for Large Language Models in Clinical Medicine by Supervised Fine-Tuning and Direct Preference Optimization: Comparative Evaluation.** *Journal of medical Internet research*
Savage, T., P Ma, S., Boukil, A., Rangan, E., Patel, V., Lopez, I., Chen, J.
2025; 27: e76048
- **Antibiotic Resistance Microbiology Dataset (ARMD): A Resource for Antimicrobial Resistance from EHRs.** *Scientific data*
Nateghi Haredasht, F., Amrollahi, F., Maddali, M. V., Marshall, N., Ma, S. P., Cooper, L. N., Johnson, A. O., Wei, Z., Medford, R. J., Kanjilal, S., Banaei, N., Deresinski, S., Goldstein, et al
2025; 12 (1): 1299
- **Theranostic methodology for ex vivo donor lung rehabilitation.** *Med (New York, N.Y.)*
Pinezich, M. R., O'Neill, J. D., Guenthart, B. A., Kim, J., Vila, O. F., Ma, S. P., Chen, Y. W., Hozain, A. E., Krishnan, A., Fawad, M., Cunningham, K. M., Wobma, H. M., Van Hassel, et al
2025: 100644
- **Physician Perspectives on Ambient AI Scribes.** *JAMA network open*
Shah, S. J., Crowell, T., Jeong, Y., Devon-Sand, A., Smith, M., Yang, B., Ma, S. P., Liang, A. S., Delahaie, C., Hsia, C., Shanafelt, T., Pfeffer, M. A., Sharp, et al
2025; 8 (3): e251904
- **Clinical entity augmented retrieval for clinical information extraction.** *NPJ digital medicine*
Lopez, I., Swaminathan, A., Vedula, K., Narayanan, S., Nateghi Haredasht, F., Ma, S. P., Liang, A. S., Tate, S., Maddali, M., Gallo, R. J., Shah, N. H., Chen, J. H.
2025; 8 (1): 45
- **Systematic Exploration of Hospital Cost Variability: A Conformal Prediction-Based Outlier Detection Method for Electronic Health Records.** *AMIA Joint Summits on Translational Science proceedings. AMIA Joint Summits on Translational Science*
Grolleau, F., Goh, E., Ma, S. P., Masterson, J., Ross, T., Milstein, A., Chen, J. H.
2025; 2025: 187-195
- **Ambient artificial intelligence scribes: utilization and impact on documentation time.** *Journal of the American Medical Informatics Association : JAMIA*
Ma, S. P., Liang, A. S., Shah, S. J., Smith, M., Jeong, Y., Devon-Sand, A., Crowell, T., Delahaie, C., Hsia, C., Lin, S., Shanafelt, T., Pfeffer, M. A., Sharp, et al
2024
- **Ambient artificial intelligence scribes: physician burnout and perspectives on usability and documentation burden.** *Journal of the American Medical Informatics Association : JAMIA*
Shah, S. J., Devon-Sand, A., Ma, S. P., Jeong, Y., Crowell, T., Smith, M., Liang, A. S., Delahaie, C., Hsia, C., Shanafelt, T., Pfeffer, M. A., Sharp, C., Lin, et al
2024
- **Recommendations for Clinicians, Technologists, and Healthcare Organizations on the Use of Generative Artificial Intelligence in Medicine: A Position Statement from the Society of General Internal Medicine.** *Journal of general internal medicine*
Crowe, B., Shah, S., Teng, D., Ma, S. P., DeCamp, M., Rosenberg, E. I., Rodriguez, J. A., Collins, B. X., Huber, K., Karches, K., Zucker, S., Kim, E. J., Rotenstein, et al
2024
- **"Covering provider": an effort to streamline clinical communication chaos.** *JAMIA open*
Joshi, M., Gokhale, A., Ma, S., Pendrey, A., Wozniak, L., Moturu, A., Schwartz, N. U., Wilson, A., Darmawan, K., Phillips, B., Cullum, S., Sharp, C., Brown, et al
2024; 7 (3): ooae057
- **Electronic Phenotyping of Urinary Tract Infections as a Silver Standard Label for Machine Learning.** *AMIA Joint Summits on Translational Science proceedings. AMIA Joint Summits on Translational Science*
Ma, S. P., Hosgur, E., Corbin, C. K., Lopez, I., Chang, A., Chen, J. H.
2024; 2024: 182-189
- **A Multi-Phase Analysis of Blood Culture Stewardship: Machine Learning Prediction, Expert Recommendation Assessment, and LLM Automation.** *AMIA ... Annual Symposium proceedings. AMIA Symposium*

- Amrollahi, F., Marshall, N., Haredasht, F. N., Black, K. C., Zahedivash, A., Maddali, M. V., Ma, S. P., Chang, A., Deresinski, S. C., Goldstein, M. K., Asch, S. M., Banaei, N., Chen, et al
2024; 2024: 147-156
- **Machine Learning-Based Prediction of Antimicrobial Susceptibility: A Step Towards Precision Antimicrobial Stewardship.** *AMIA ... Annual Symposium proceedings. AMIA Symposium*
Amrollahi, F., Haredasht, F. N., Vansomphone, A., Marshall, N., Maddali, M. V., Ma, S. P., Chang, A., Deresinski, S. C., Goldstein, M. K., Kanjilal, S., Medford, R. J., Cooper, L. N., Asch, et al
2024; 2024: 138-146
 - **The promises and limitations of artificial intelligence for quality improvement, patient safety, and research in hospital medicine.** *Journal of hospital medicine*
Ma, S. P., Rohatgi, N., Chen, J. H.
2024
 - **Artificial Intelligence-Generated Draft Replies to Patient Inbox Messages.** *JAMA network open*
Garcia, P., Ma, S. P., Shah, S., Smith, M., Jeong, Y., Devon-Sand, A., Tai-Seale, M., Takazawa, K., Clutter, D., Vogt, K., Lugtu, C., Rojo, M., Lin, et al
2024; 7 (3): e243201
 - **Enhancing Antibiotic Stewardship: A Machine Learning Approach to Predicting Antibiotic Resistance in Inpatient Care.** *AMIA ... Annual Symposium proceedings. AMIA Symposium*
Haredasht, F. N., Maddali, M. V., Ma, S. P., Chang, A., Kim, G. Y., Banaei, N., Deresinski, S., Goldstein, M. K., Asch, S. M., Chen, J. H.
2024; 2024: 857-864
 - **Using Case Mix Index within Diagnosis-Related Groups to Evaluate Variation in Hospitalization Costs at a Large Academic Medical Center.** *AMIA ... Annual Symposium proceedings. AMIA Symposium*
Pi, S., Masterson, J., Ma, S. P., Corbin, C. K., Milstein, A., Chen, J. H.
2023; 2023: 1201-1208
 - **Targeting Repetitive Laboratory Testing with Electronic Health Records-Embedded Predictive Decision Support: A Pre-Implementation Study.** *Clinical biochemistry*
Rabbani, N., Ma, S. P., Li, R. C., Winget, M., Weber, S., Boosi, S., Pham, T. D., Svec, D., Shieh, L., Chen, J. H.
2023
 - **Bioengineered optogenetic model of human neuromuscular junction** *BIOMATERIALS*
Vila, O. F., Chavez, M., Ma, S. P., Yeager, K., Zhuludeva, L., Colon-Mercado, J. M., Qu, Y., Nash, T. R., Lai, C., Feliciano, C. M., Carter, M., Kamm, R. D., Judge, et al
2021; 276: 121033
 - **Engineering of human cardiac muscle electromechanically matured to an adult-like phenotype** *NATURE PROTOCOLS*
Ronaldson-Bouchard, K., Yeager, K., Teles, D., Chen, T., Ma, S., Song, L., Morikawa, K., Wobma, H. M., Vasciaveo, A., Ruiz, E. C., Yazawa, M., Vunjak-Novakovic, G.
2019; 14 (10): 2781-2817
 - **Quantification of human neuromuscular function through optogenetics** *THERANOSTICS*
Vila, O. F., Uzel, S. G. M., Ma, S. P., Williams, D., Pak, J., Kamm, R. D., Vunjak-Novakovic, G.
2019; 9 (5): 1232-1246
 - **Advanced maturation of human cardiac tissue grown from pluripotent stem cells** *NATURE*
Ronaldson-Bouchard, K., Ma, S. P., Yeager, K., Chen, T., Song, L., Sirabella, D., Morikawa, K., Teles, D., Yazawa, M., Vunjak-Novakovic, G.
2018; 556 (7700): 239+
 - **Dual IFN-gamma/hypoxia priming enhances immunosuppression of mesenchymal stromal cells through regulatory proteins and metabolic mechanisms.** *Journal of immunology and regenerative medicine*
Wobma, H. M., Kanai, M., Ma, S. P., Shih, Y., Li, H. W., Duran-Struuck, R., Winchester, R., Goeta, S., Brown, L. M., Vunjak-Novakovic, G.
2018; 1: 45-56
 - **Optogenetics for the Maturation of hiPS-CMs**
Shen, C. Y., Ma, S. P., White, E. C., Vila, O. F., Chen, T. H., Yeager, K., Vunjak-Novakovic, G.
MARY ANN LIEBERT, INC.2017: S156-S157

- **Real-Time Bioluminescence Imaging of Cell Distribution, Growth, and Differentiation in a Three-Dimensional Scaffold Under Interstitial Perfusion for Tissue Engineering** *TISSUE ENGINEERING PART C-METHODS*
Vila, O. F., Garrido, C., Cano, I., Guerra-Rebollo, M., Navarro, M., Meca-Cortes, O., Ma, S. P., Engel, E., Rubio, N., Blanco, J.
2016; 22 (9): 864-872
- **Protection of Organ Vasculature By Endothelial Overexpression of HLA-G**
Wobma, H. M., Ma, S. P., Fang, J., Vasavada, H., Duran-Struuck, R., Winchester, R., Hirschi, K., Vunjak-Novakovic, G.
ELSEVIER SCIENCE INC.2016: S362
- **Preconditioning Mesenchymal Stem Cells to Improve Transplant Tolerance**
Wobma, H. M., Kanai, M., Ma, S. P., Nakazawa, K. R., Duran-Struuck, R., Li, H., Vunjak-Novakovic, G.
ELSEVIER SCIENCE INC.2016: S149
- **Tissue-Engineering for the Study of Cardiac Biomechanics** *JOURNAL OF BIOMECHANICAL ENGINEERING-TRANSACTIONS OF THE ASME*
Ma, S. P., Vunjak-Novakovic, G.
2016; 138 (2): 021010