Stanford

Carlos Castillo Passi

Postdoctoral Scholar, Radiological Sciences Laboratory

Bio

BIO

Carlos Castillo-Passi began his academic journey at Pontificia Universidad Catolica de Chile (PUC), where he earned both a degree and an MSc in Electrical Engineering in 2018. He then pursued a PhD in Biological and Medical Engineering through a joint program between PUC and King's College London (KCL), completing it with maximum distinction in 2024. His research focused on the design of low-field cardiac MRI sequences using open-source MRI simulations. In 2023, his work on open-source MRI simulations was highlighted by the editor of Magnetic Resonance in Medicine (MRM). Furthermore, his application of this work to low-field cardiac MRI earned him the Early Career Award in Basic Science from the Society for Cardiovascular Magnetic Resonance (SCMR) in 2024. In addition to his research, Carlos is an active member of JuliaHealth, contributing to the development of high-performance, reproducible tools for health and medicine. In 2025, he joined Stanford University as a postdoctoral researcher, where he continues his work in cardiac MRI and open-source technologies.

HONORS AND AWARDS

- Top Viewed Article in MRM (Top 10%), Wiley (2026)
- 3rd Place Trainee Abstract Award, ISMRM Open & Reproducible Research Study Group (2026)
- Top Viewed Article in MRM (Top 10%), Wiley (2025)
- 2nd Place at Trainee Abstract Presentations, ISMRM MR in Drug Research Business Meeting (2024)
- Early Career Award - Basic Science, CMR2024 (2024)
- Magna Cum Laude Merit Award (Top 15%), ISMRM Annual Meeting (2024)
- Summa Cum Laude Merit Award (Top 5%), ISMRM Annual Meeting (2023)
- Editor's Pick for July 2023, Magnetic Resonance in Medicine (2023)

STANFORD ADVISORS

- Daniel Ennis, Postdoctoral Faculty Sponsor

Publications

PUBLICATIONS

- **KomaMRI.jl: An open-source framework for general MRI simulations with GPU acceleration.** *Magnetic resonance in medicine*
  Castillo-Passi, C., Coronado, R., Varela-Mattatall, G., Alberola-López, C., Botnar, R., Irarrazaval, P.
  2023; 90 (1): 329-342
- **MRSeqStudio: MRI Sequence Design and Simulation as a Service in a Free and Open-Source Web Platform.** *Journal of medical systems*
  Villacorta-Aylagas, P., Rodríguez-Cayetano, M., Castillo-Passi, C., Irarrazaval, P., Simmross-Wattenberg, F., Alberola-López, C.

2026; 50 (1)

- **3D Radial Knee Imaging at 0.55 T: Simultaneous T₁-T₂ Mapping and Synthetic Contrast Generation in Under 4 min** *NMR IN BIOMEDICINE*
  Garrido, N., Pedraza, D., Castillo-Passi, C., Barrera, D., Prieto, C., Botnar, R.
  2026; 39 (4): e70265
- **3D Whole-Heart Joint T₁/T_{1ρ} Mapping and Water-Fat Imaging on a Clinical 0.55-T Low-Field Scanner** *NMR IN BIOMEDICINE*
  Crabb, M. G., Kunze, K. P., Castillo-Passi, C., Si, D., Littlewood, S. J., Prieto, C., Botnar, R. M.
  2026; 39 (2): e70195
- **Versatile and Highly Efficient MRI Simulation of Arbitrary Motion in KomaMRI.** *Magnetic resonance in medicine*
  Villacorta-Aylagas, P., Castillo-Passi, C. A., Kierulf, R. A., Menchón-Lara, R. M., Rodríguez-Galván, J. R., Sierra-Pallares, J. B., Irarrazaval, P., Alberola-López, C.
  2025
- **Cardiac Magnetic Resonance Fingerprinting for Simultaneous T1, T2, and Fat-Fraction Quantification at 0.55 T** *NMR IN BIOMEDICINE*
  Pedraza, D., Castillo-Passi, C., Kunze, K., Botnar, R. M., Prieto, C.
  2025; 38 (10): e70143
- **Sampling of non-Gaussian Ensemble Average Propagators for the simulation of diffusion magnetic resonance images** *MAGNETIC RESONANCE IN MEDICINE*
  Rodriguez-Galvan, J. R., Villacorta-Aylagas, P., Merino-Caviedes, S., Simmross-Wattenberg, F., Castillo-Passi, C., Irarrazaval, P., Tristan-Vega, A., Alberola-Lopez, C.
  2025: 1255-1265
- **mtrk-A flexible environment for developing open-source MRI pulse sequences** *MAGNETIC RESONANCE IN MEDICINE*
  Artiges, A., Saimbhi, A., Castillo-Passi, C., Lattanzi, R., Block, K.
  2025
- **Simultaneous liver T1, T2, and ADC MR fingerprinting using optimized motion-compensated diffusion preparations: An initial validation on volunteers.** *Magnetic resonance in medicine*
  Velasco, C., Castillo-Passi, C., Chaher, N., Karampinos, D. C., Irarrazaval, P., Phinikaridou, A., Botnar, R. M., Prieto, C.
  2025
- **Simultaneous 3D aortic lumen and vessel wall imaging at 0.55 T at either systole or diastole** *MAGNETIC RESONANCE IN MEDICINE*
  Paredes, M., Castillo-Passi, C., Kunze, K. P., Fotaki, A., Littlewood, S., Botnar, R. M., Prieto, C.
  2025
- **Highly efficient image navigator based 3D whole-heart cardiac MRA at 0.55T** *MAGNETIC RESONANCE IN MEDICINE*
  Castillo-Passi, C., Kunze, K. P., Crabb, M. G., Munoz, C., Fotaki, A., Neji, R., Irarrazaval, P., Prieto, C., Botnar, R. M.
  2025; 93 (2): 689-698
- **DeepSPIO: Super Paramagnetic Iron Oxide Particle Quantification Using Deep Learning in Magnetic Resonance Imaging.** *IEEE transactions on pattern analysis and machine intelligence*
  Maggiora, G. D., Castillo-Passi, C., Qiu, W., Liu, S., Milovic, C., Sekino, M., Tejos, C., Uribe, S., Irarrazaval, P.
  2022; 44 (1): 143-153
- **A Spatial Off-Resonance Correction in Spirals for Magnetic Resonance Fingerprinting.** *IEEE transactions on medical imaging*
  Coronado, R., Cruz, G., Castillo-Passi, C., Tejos, C., Uribe, S., Prieto, C., Irarrazaval, P.
  2021; 40 (12): 3832-3842
- **MAPL1: q-space reconstruction using ℓ1 -regularized mean apparent propagator.** *Magnetic resonance in medicine*
  Varela-Mattatall, G., Castillo-Passi, C., Koch, A., Mura, J., Stirnberg, R., Uribe, S., Tejos, C., Stöcker, T., Irarrazaval, P.
  2020; 84 (4): 2219-2230