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Antonio Franques

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Areas of Interest

Computer Architecture – Hardware/Software Co-Design – On-Chip Interconnect Modeling – HPC Software Development

Education

- **University of Illinois at Urbana-Champaign** — Urbana, IL
  Ph.D. in Computer Science – Advisor: Prof. Josep Torrellas — *Aug. 2021 (expected)*
  M.S. in Computer Science — *Dec. 2019*
- **Polytechnic University of Valencia** — Valencia, Spain
  B.S. in Telecommunications Engineering – Class Rank: 2nd — *June 2015*

Industry & Research Experience

- **AMD Research** — Bellevue, WA and Austin, TX
  Co-Op Engineer – Software Development — *Sept. 2018 – May 2019*
  - Developed and benchmarked driver and library software (C/C++, Libfabric, GDB) to evaluate the capabilities and performance of prototype hardware for exascale computing in both virtual (QEMU) and real environments
  - Co-authored a U.S. patent for hybrid interconnect technologies (App. No. 16/588,612)
- **I-ACOMA Group** — University of Illinois at Urbana-Champaign, Urbana, IL
  Graduate Research Assistant — *Aug. 2015 – Present*
  - **Area**: Computer Architecture, Parallel Computing, and Systems
  - Worked on HW-SW co-designs for novel highly-scalable shared-memory chip multiprocessors, leveraging on-chip wireless communication to reduce the large cost of core-to-core communication in parallel computing. Evaluated performance using Gem5+SST+Multi2Sim, and energy consumption with McPAT+Cacti
- **DAMRES Numerical Analysis Lab** — Polytechnic University of Valencia, Valencia, Spain
  Undergraduate Research Assistant — *Sept. 2013 – July 2015*
  - **Area**: Computational Mathematics
  - Designed new set of highly efficient and stable iterative methods for solving nonlinear equations and systems. Applied and analyzed these methods using Matlab to Bratu's problem and Burgers's equation (used in Physics)

Select Publications

- **A. Franques**, A. Kokolis, S. Abadal, V. Fernando, S. Misailovic, J. Torrellas. *"WiDir: A Wireless-Enabled Directory Cache Coherence Protocol"*. International Symposium on High-Performance Computer Architecture **(HPCA)**, 2021.
- **A. Franques**, S. Abadal, H. Hassanieh, J. Torrellas. *"Fuzzy-Token: An Adaptive MAC Protocol for Wireless-Enabled Manycores"*. Design, Automation & Test in Europe Conference **(DATE)**, 2021.
- S. Jog, Z. Liu, **A. Franques**, V. Fernando, S. Abadal, J. Torrellas, H. Hassanieh. *"One Protocol to Rule Them All: Deep Reinforcement Learning Aided MAC for Wireless Network-on-Chips"*. Symposium on Networked Systems Design and Implementation **(NSDI)**, 2021.
- V. Fernando, **A. Franques**, S. Abadal, S. Misailovic, J. Torrellas. *"Replica: A Wireless Manycore for Communication-Intensive and Approximate Data"*. International Conference on Architectural Support for Programming Languages and Operating Systems **(ASPLOS)**, 2019.

Relevant Coursework

Parallel Computer Architectures – Operating Systems Design – Machine Learning for Signal Processing – Designing Applications for Extreme Scale Systems (MPI+OpenMP) – Design and Implementation of Scripting Languages

Skills

- **Programming Languages**: C/C++, Python, Java, Matlab, PHP, Javascript, SQL
- **Frameworks & Tools**: Gem5, SST, Multi2Sim, McPAT+Cacti, MPI, CUDA, Mathematica, Git, Matplotlib, LaTeX