

Vasil Pano

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- EDUCATION
- ◇ **Ph.D., Electrical Engineering**, 2019.
Drexel University, Philadelphia, PA.
 - ◇ **B.S., Computer Engineering**, 2014.
Drexel University, Philadelphia, PA.
- PROFESSIONAL EXPERIENCE
- ◇ **Post Doctoral Researcher**, (September 2019 – current)
Drexel Wireless Systems Laboratory, Department of Electrical and Computer Engineering
Drexel University, Philadelphia, PA, USA
 - Post Doctoral Researcher and Manager of the Drexel Wireless Systems Laboratory (DWSL)
 - Current research projects:
 - Analyzing wireless communication behavior on a Multi-Die System
 - Evaluating novel TSV-based antenna for on-package wireless communication
 - Investigating a novel multi-die topologies and routing algorithms infrastructure
 - ◇ **Graduate Research Assistant**, (September 2014 – August 2019)
VLSI and Architecture Laboratory, Department of Electrical and Computer Engineering
Drexel University, Philadelphia, PA, USA
 - Ph.D. Candidate and member of the Drexel VLSI and Architecture Laboratory (VANDAL)
 - Studying Computer Architecture focusing primarily on:
 - Wireless on-chip communication technologies
 - Network-on-Chip architectures and routing algorithms
 - Computer memory subsystem design and cache coherence protocols
 - Extreme scale NoCs and memory models
 - Current research projects:
 - Analyzing wireless communication behavior on a NoC (using custom SystemC simulator)
 - Evaluating novel TSV-based antenna for next generation on-chip wireless communication
 - Implemented a novel multi-chip wireless infrastructure (novel propagation technique on HFSS)
 - Designed multiple clustered architectures within Gem5 (using Garnet/Ruby)
 - Implementing custom thread mapping solution using Sigil2.0 and Synchrotrace (in-house tools)
 - ◇ **Graduate Technical Intern**, (June 2016 – January 2017)
Intel Corporation
Hillsboro, OR, USA
 - Developed a novel memory coherence mechanism for software visibility of write transactions.
 - Conceptualized the design and architecture of the novel mechanism improved a previous design.
 - Implemented the coherence mechanism on a proprietary large-scale network-on-chip simulator.
 - Provided a thorough analysis of the benefits of implementing such a mechanism in hardware.
 - ◇ **Undergraduate Research Assistant – VLSI Laboratory**, (April 2013 – July 2014)
VLSI Laboratory, Department of Electrical and Computer Engineering
Drexel University, Philadelphia, PA, USA
 - Senior Design Project on Wireless Interconnect Design for 2D and 3D ICs
 - NoC simulation, HFSS modeling, RF and antenna modeling
 - Network-on-Chip, Computer Architecture, Custom VLSI Design, ASIC Design I/II courses
 - DragonNoC, Booksim and HNOG (OMNET++ based simulator) for NoC simulation

- Gem5 (Ruby and Garnet) for full-system, SynchroTrace for trace-based simulation
 - Cadence: RTL Compiler, Encounter, Virtuoso
 - Synopsys: 1) DC for synthesis, 2) ICC for physical design
 - 3) Primitime for Static Timing Analysis 4) HSPICE for simulation
- ◇ **Undergraduate Research Assistant – DPAC Laboratory**, (June 2013 – July 2014)
DPAC Laboratory, Department of Electrical and Computer Engineering
Drexel University, Philadelphia, PA, USA
 - Implemented custom barrier synchronization method to the in-house SynchroTrace simulator
 - Executed multi-threaded trace-based system simulation for evaluating many-core architectures and NoCs
 - Application-aware memory and NoC co-design
 - Performed benchmark analysis (Splash-2x and PARSEC 3.0) on Synchrotrace
 - ◇ **Operations Planning Intern**, (April 2012 – September 2013)
PJM Interconnection
Norristown, PA, USA
 - Thorough understanding of Software Development Life Cycle (SDLC) and Waterfall Methodology
 - Created and maintained database design with detailed description of logical entities and physical tables
 - Expertise in writing functional specifications and translating business requirements to technical specifications
 - Extensive experience in manual and automated testing of applications
 - Responsible for performing production and regressing testing the proprietary software called eDART
 - Effectively coordinated with member companies and collected time sensitive information critical to reliability

PUBLICATIONS **Journal Publications**

- ◇ V. Pano, I. Tekin, I. Yilmaz, Y. Liu, K. Dandekar, and B. Taskin, *TSV Antennas for Multi-Band Wireless Communication*, IEEE Journal on Emerging and Selected Topics in Circuits and Systems (IEEE JETCAS), March 2020.
- ◇ V. Pano, I. Tekin, Y. Liu, K. Dandekar, and B. Taskin, *TSV-Based Antenna for On-Chip Wireless Communication*, IET Microwaves, Antennas & Propagation (IET-MAP), December 2019.
- ◇ R. Kuttappa, A. Balaji, V. Pano, B. Taskin, and H. Mahmoodi, *RotaSYN: Rotary Traveling Wave Oscillator SYNthesizer*, IEEE Transactions on Circuits and Systems I: Regular Papers (TCAS-I), January 2019.
- ◇ A. More, V. Pano, and B. Taskin, *Vertical Arbitration-free 3D NoCs*, IEEE Transactions on Computer Aided Design of Integrated Circuits and Systems (TCAD), Vol. 37, No. 9, pp. 1853–1866, September 2018.

Conference Publications

- ◇ V. Pano, R. Kuttappa, and B. Taskin *3D NoCs with Active Interposer for Multi-Die Systems*, Proceedings of the IEEE/ACM International Symposium on Networks-on-Chip (NOCS), October 2019.
- ◇ R. Kuttappa, B. Taskin, S. Lerner, V. Pano, and I. Savidis *Robust Low Power Clock Synchronization for Multi-Die Systems*, Proceedings of the ACM/IEEE International Symposium on Low Power Electronics and Design (ISLPED), July 2019.
- ◇ V. Pano, I. Tekin, Y. Liu, K. Dandekar, and B. Taskin *In-Package Wireless Communication with TSV-based Antenna*, Proceedings of the IEEE International Symposium on Circuits and Systems (ISCAS), May 2019.
- ◇ V. Pano, S. Lerner, Isikcan Yilmaz, Michael Lui, and B. Taskin, *Workload-Aware Routing (WAR) for Network-on-Chip Lifetime Improvement*, Proceedings of the IEEE International Symposium on Circuits and Systems (ISCAS), May 2018.
- ◇ S. Lerner, V. Pano, and B. Taskin, *NoC Router Lifetime Improvement Using Per-Port Router Utilization*, Proceedings of the IEEE International Symposium on Circuits and Systems (ISCAS), May 2018.

- ◇ V. Pano, Y. Liu, I. Yilmaz, A. More, B. Taskin, and K. Dandekar, *Wireless NoCs using Directional and Substrate Propagation Antennas*, Proceedings of the IEEE International Symposium on VLSI (ISVLSI), pp. 188-193, July 2017.
- ◇ V. Pano, I. Yilmaz, A. More, and B. Taskin, *Energy Aware Routing of Multi-Level Network-on-Chip Traffic*, Proceedings of the IEEE International Conference on Computer Design (ICCD), pp. 480-486, October 2016.
- ◇ V. Pano, I. Yilmaz, Y. Liu, B. Taskin, and K. Dandekar, *Wireless Network-on-Chip Analysis of Propagation Technique for On-chip Communication*, Proceedings of the IEEE International Conference on Computer Design (ICCD), pp. 400-403, October 2016.
- ◇ Y. Liu, V. Pano, D. Patron, K. Dandekar, and B. Taskin, *Innovative Propagation Mechanism for Inter-chip and Intra-chip Communication*, Proceedings of the IEEE Wireless and Microwave Technology Conference (WAMICON), pp. 1-6, April 2015.

- TEACHING ASSISTANT COURSEWORK
- ◇ *High Performance Computer Architecture*, Spring 2015-2016, Graduate Level Class
 - ◇ *Systems Programming*, Summer 2014-15 & 2016-2017 & Winter 2015-2016, Junior Level Class
 - ◇ *Computation Lab I & II*, Fall & Winter 2015-2016 & Winter 2017-2018, Freshmen Level Class
 - ◇ *Parallel Computer Architecture*, Fall 2015-16 & Winter 2016-2017, Graduate Level Class
 - ◇ *Digital Systems Projects*, Spring 2014-15 & Fall 2017-2018, Junior Level Class
 - ◇ *Internet Architecture and Protocols*, Winter 2014-15, Junior Level Class
 - ◇ *Digital Logic Design*, Spring 2016-2017, & Fall 2018-2019, Sophomore Level Class
- VOLUNTEER ACTIVITIES
- ◇ Reviewer - ACM Journal on Emerging Technologies in Computing Systems; Elsevier Microelectronics Journal; IEEE International Symposium on Nanoelectronic and Information Systems; Elsevier Integration Journal, IEEE International Symposium on Circuits and Systems;
 - ◇ Graduate Student Supervisor (Angela Wei) - Interconnect Modeling for Multi-Die Systems Drexel University, 2019-20
 - ◇ Senior Design co-advisor - The VarIoT Hub - Drexel University, 2019-20
 - ◇ Senior Design co-advisor - Radio Arena - Drexel University, 2019-20
 - ◇ Senior Design co-advisor - SDR for Anti-Jamming - Drexel University, 2019-20
 - ◇ Graduate Student Supervisor (Isikcan Yilmaz) - Gem5 & NoC research Drexel University, 2015-18
 - ◇ Senior Design Mentor - Wireless DRAM Solution Drexel University, 2015-16
 - ◇ STAR Mentor (Eonides Neto) - Router architecture for Network-on-Chip Drexel University, 2015
 - ◇ Freshman Design Mentor - Wireless HDMI Drexel University, 2013-14
- SKILLS
- ◇ C, C++, SystemC, Verilog HDL, HFSS
 - ◇ Pthread, OpenMP, CUDA
 - ◇ Python, Matlab, L^AT_EX
 - ◇ Synopsys – Design Compiler, IC Compiler, HSpice
Cadence – RTL Compiler, Encounter, Virtuoso Suite
- ACADEMIC HONORS AND AWARDS
- ◇ Drexel College of Engineering Outstanding Mentorship Award, 2018
 - ◇ Drexel ECE Nihat Bilgutay Award (High Academic Achievement), 2017, 2018

- ◇ Drexel College of Engineering Dean's List, 2009–2014
- ◇ Drexel College of Engineering Dean's Scholarship, September 2009 – June 2016
- ◇ DU Drexel University Endowed Scholarship, Drexel University, September 2009 – June 2014

REFERENCES ◇ **Dr. Baris Taskin**

Professor, Department of Electrical and Computer Engineering
Drexel University, Philadelphia, PA
E-mail: taskin@coe.drexel.edu

◇ **Dr. Kapil R. Dandekar**

Professor, Department of Electrical and Computer Engineering
Associate Dean for Enrollment Management and Graduate Education
Drexel University, Philadelphia, PA
E-mail: dandekar@drexel.edu

◇ **Dr. Ankit More**

Research Scientist, Data Center Group
Intel Corporation, Hillsboro, OR
E-mail: ankit.more@intel.com

◇ **Dr. Ibrahim Tekin**

Professor, Department of Electronics Engineering
Sabanci University, Istanbul, Turkey
E-mail: tekin@sabanciuniv.edu

◇ **Dr. Nagarajan Kandasamy**

Professor, Department of Electrical and Computer Engineering
Associate Department Head for Undergraduate Affairs
Drexel University, Philadelphia, PA
E-mail: kandasamy@coe.drexel.edu