Yurii Piadyk

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INTERESTS Embedded/Imaging Systems, Edge Computing, Computer Vision/Graphics

EDUCATION

New York University, NY, USA

- Ph.D. in Computer Science — May 2022
  - Advisor: Prof. Dr. Claudio Silva
  - GPA: 4.0 / 4.0

Taras Shevchenko National University, Kyiv, Ukraine

- M.Sc. in High Energy Physics — Jun 2016
  - Diploma with Honours
  - Advisor: Dr. Giovanni Calderini
  - Cumulative GPA: 3.95 / 4.00
- B.S. in Physics — Jun 2014
  - Diploma with Honours
  - Advisor: Prof. Oleg Bezshyyko
  - Cumulative GPA: 3.95 / 4.00

RESEARCH EXPERIENCE

Research Assistant, **ViDA (Visualization and Data Analytics Lab)**, NYU, USA — Sep 2016 – Present

- Building modular sports tracking system
  - High-speed cameras for tracking players and the ball
  - Precise audio/video synchronization for game events detection
  - Edge processing with Nvidia Jetson TX2
- Developing Reconfigurable Environmental Intelligence Platform (REIP)
  - Sensors network with edge processing for in situ insight generation
  - Supported by NSF Award 1828576
  - Based on Nvidia Jetson Nano
- Designed a novel subsurface light scattering acquisition device
  - Based on custom light field camera
  - Capable of measuring up to 3 mm of anisotropic subsurface scattering
  - Paper accepted at Electronic Imaging 2020 and patent filed

3 Internships, **LPNHE (Laboratoire de Physique Nucléaire et de Hautes Energies)**, UPMC, Paris, France
Each bullet is a separate internship:

- Development of a pixel sensor based telescope — Feb 2016 – Apr 2016
  - Implemented an FPGA based readout system for FE-I4 pixel sensors
  - Evaluated performance of the system at test-beam in CERN
  - Designed an algorithm for optimization of track patterns of charged particles
- Advanced testing of the Associative Memory chip (AMchip) — Feb 2015 – Apr 2015
  - Improved test-bench developed during previous internship
  - Established 2 Gbps serial links for full emulation of AMchip's working environment
  - Added support of overclocking and power consumption measurements
- Evaluation of the Associative Memory chip for ATLAS Fast TracKer (FTK) — Feb 2014 – Apr 2014
  - Developed an FPGA based test-bench supporting JTAG protocol
  - Integrated 100 Mbps Ethernet connection into the system
  - Conducted performance tests for AMchip04
  - Supervisors: Dr. Giovanni Calderini and Francesco Crescioli, Ph.D.

Summer School, **DESY (Deutsches Elektronen-Synchrotron)**, Hamburg, Germany — Jul 2013 – Aug 2013

- Study of field distortions in Time Projection Chamber (TPC) and their influence on resolution
  - Performed simulations of electron transport in Gaseous Electron Multipliers (GEMs)
  - Improved Garfield++ interface for CST™ Electromagnetic Studio
  - Supervisor: Klaus Zenker, Ph.D.

PUBLICATIONS

[1] Y. Piadyk, Y. Lockerman, C. Silva, "Anisotropic Subsurface Scattering Acquisition Through a Light Field Based Apparatus," *Electronic Imaging 2020 (to appear)*

[2] L. Alunni, N. Biesuz, G.M. Bilei, S. Citraro, F. Crescioli, L. Fanò, G. Fedi, D. Magalotti, G. Magazzù, L. Servoli, L. Storchi, F. Palla, P. Placidi, A. Papi, Y. Piadyk, E. Rossi, A. Spiezia, "A pattern recognition mezzanine based on associative memory and FPGA technology for L1 track triggering at HL-LHC," *Nuclear Instruments and Methods in Physics Research*, vol. 824, pp. 284-286, Jul 2016.

[3] F. Crescioli, R. Beccherle, E. Rossi, V. Liberali, M. Beretta, S. Citraro, A. Stabile, M.A. Mirzaei, Y. Piadyk, A. Annovi, P. Luciano, P. Giannetti, "FTK AMchip05: an Associative Memory Chip Prototype for Track Reconstruction at Hadron Collider Experiments," *EPS-HEP*, Jul 2015.

AWARDS & SCHOLARSHIPS

- *Research Assistanship*, CSE Department, NYU Tandon — Sep 2017 – May 2022
- *Provost's GRI Fellowship*, CSE Department, NYU Tandon — Jan 2019 – Mar 2019
- *SIGGRAPH Trip Award*, NYU Courant — 2017
  - For the best final project in Computer Graphics class, video.
- *Dean's Fellowship*, CSE Department, NYU Tandon — Sep 2016 – Aug 2017
- *Scholarship* of the President of Ukraine — 2010, 2008, 2007
  - For wining places in National Olympiad in Physics.
- *Scholarship* of the Mayor of the City of Lviv, Ukraine — 2008
  - For achievements in studying physics and computer science.

OTHER EXPERIENCE

School, **CERN High Energy Physics Training**, Geneva, Switzerland — Oct 2014

- Passed an intensive training on Standard Model.

Danube School, **Instrumentation in Elementary Particle & Nuclear Physics**, Novi Sad, Serbia — Sep 2014

- Received a hands-on experience working with modern sensors.

SKILLS

- Software
  - Programming Languages: C/C++, Python, VHDL/Verilog, GLSL
  - Computer Vision/Graphics: OpenCV, OpenGL, libigl, Eigen, Unreal Engine
  - CAD: Fusion 360, Eagle, SketchUp
  - High Energy Physics: ROOT, Geant4, Garfield++, MCNP
  - Math: Matlab, Origin
  - Other: Qt, GStreamer, Asio, Cython, CST EM Studio, a bit of CUDA
- Hardware
  - 3D Printing: Ultimaker, Cura
  - Laser Cutting: Epilog, Adobe Illustrator
  - CNC: Tormach, Othermill, Bantam Tools
  - Electronics: FPGA (Xilinx Vivado/ISE), Microcontrollers (Tiva C, Arduino)

LANGUAGES

- Ukrainian (native) ▪ English (professional) ▪ Russian (fluent) ▪ French (intermediate) ▪ Mandarin (basic)

REFERENCES

- **Prof. Dr. Claudio Silva**
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  New York University
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- **Prof. Dr. Daniele Panozzo**
  Assistant professor at the Courant Institute of Mathematical Sciences
  New York University
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