

Yurii Piadyk

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INTERESTS	Embedded/Imaging Systems, Edge Computing, Computer Vision/Graphics, Blockchain/Finance	
EDUCATION	New York University , NY, USA	
	<ul style="list-style-type: none">▪ Ph.D. in Computer Science• Advisor: Prof. Claudio Silva• GPA: 4.0 / 4.0	Dec 2022
	Taras Shevchenko National University , Kyiv, Ukraine	
	<ul style="list-style-type: none">▪ M.S. in High Energy Physics• Diploma with Honours	Jun 2016
	<ul style="list-style-type: none">▪ B.S. in Physics• Diploma with Honours	Jun 2014
RESEARCH EXPERIENCE	<i>Research Associate</i> , ViDA (Visualization and Data Analytics Lab) , NYU, USA	Sep 2022 – Present
	<ul style="list-style-type: none">▪ Developing a high-speed 3D geometry scanner• Based on an analog structured light approach• High resolution of >1 MP at 1000 scans/sec	TBD
	<ul style="list-style-type: none">▪ Acquired a unique multimodal urban scene dataset• Highly synchronized (<1 us) three data modalities: audio, video, and LiDAR• Using custom REIP sensors with two 5 MP cameras and a 4 x 3 microphone array	MDPI Sensors 2023
	<i>Research Assistant</i> , ViDA (Visualization and Data Analytics Lab) , NYU, USA	Sep 2016 – Aug 2022
	<ul style="list-style-type: none">▪ Developed a Reconfigurable Environmental Intelligence Platform (REIP)• Consists of Python SW framework and custom HW sensors based on NVIDIA Jetson• Used for fast prototyping of multimodal sensors with edge computing capabilities	MDPI Sensors 2022
	<ul style="list-style-type: none">▪ Implemented an accurate structured light scanner with a corresponding simulator• Pixel-wise matching between the data captured with hardware setup and simulated images• An ideal test-bed for developing and benchmarking data-driven 3D reconstruction algorithms	NeurIPS 2021
	<ul style="list-style-type: none">▪ Invented a modular sports tracking system (patent pending)• Featuring high-speed (>100 FPS) cameras for ball and player tracking on a large game field• Real-time adjustable field of view and precise synchronization for game events detection	Nvidia GTC 2020
	<ul style="list-style-type: none">▪ Designed a novel anisotropic subsurface light scattering acquisition device• Based on a custom light field imaging setup and built from off-the-shelf components• Capable of measuring subsurface scattering up to 3 mm away from the illumination point	Electronic Imaging 2020
	<i>3 Internships</i> , LPNHE (Laboratoire de Physique Nucléaire et de Hautes Energies) , UPMC, Paris, France	
	<i>Each bullet is a separate internship:</i>	
	<ul style="list-style-type: none">▪ Development of a particle telescope based on FE-I4 pixel sensors• Designed an algorithm for the optimization of track patterns of charged particles (FTK)• Implemented an FPGA based readout system and evaluated it at a test-beam in CERN	Feb 2016 – Apr 2016
	<ul style="list-style-type: none">▪ Advanced testing of the Associative Memory chip (AMchip)• Established 2 Gbps serial links for full emulation of AMchip's working environment• Added support for overclocking and power consumption measurements	Feb 2015 – Apr 2015
	<ul style="list-style-type: none">▪ Evaluation of the Associative Memory chip for ATLAS Fast TracKer (FTK)• Developed an FPGA based test-bench supporting the JTAG protocol• Integrated 100 Mbps Ethernet connection into the system using IPbus protocol	Feb 2014 – Apr 2014
	<i>Summer School</i> , DESY (Deutsches Elektronen-Synchrotron) , Hamburg, Germany	Jul 2013 – Aug 2013
	<ul style="list-style-type: none">▪ Study of Time Projection Chamber (TPC) resolution in presence of field distortions• Performed simulations of electron transport in Gaseous Electron Multipliers (GEMs)• Improved C++ interface of Garfield++ library for CST™ Electromagnetic Studio	

PATENTS

- [1] Y. Piadyk, C. A. Dietrich, C. T. Silva, "Tracking sparse objects and people in large scale environments," *US 2021/0287336 A1*, Mar 2021. (*under review*)

PUBLICATIONS

- [1] Y. Piadyk, J. Rulff, E. Brewer, M. Hosseini, K. Ozbay, M. Sankaradas, S. Chakradhar, C. Silva, "StreetAware: A High-Resolution Synchronized Multimodal Urban Scene Dataset," *MDPI Sensors* 2023, 23, 3710, Apr 2023.
- [2] Y. Piadyk, B. Steers, C. Mydlarz, M. Salman, M. Fuentes, J. Khan, H. Jiang, K. Ozbay, J. P. Bello, C. Silva, "REIP: A Reconfigurable Environmental Intelligence Platform and Software Framework for Fast Sensor Network Prototyping," *MDPI Sensors* 2022, 22, 3809, May 2022.
- [3] S. Koch*, Y. Piadyk*, M. Worchel, M. Alexa, C. Silva, D. Zorin, D. Panozzo, "Hardware Design and Accurate Simulation of Structured-Light Scanning for Benchmarking of 3D Reconstruction Algorithms," *NeurIPS 2021*, Datasets and Benchmarks Track, Dec 2021. (** equal contributions*)
- [4] Y. Piadyk, C. Dietrich, C. Silva, "LegoTracker: An Intelligent Modular System for Large-Scale Sports Tracking," *NVIDIA GTC 2020*, Mar 2020.
- [5] Y. Piadyk, Y. Lockerman, C. Silva, "Anisotropic Subsurface Scattering Acquisition Through a Light Field Based Apparatus," *Electronic Imaging 2020*, Imaging Sensors and Systems, Jan 2020.
- [6] L. Alunni, N. Biesuz, G.M. Bilei, S. Citraro, F. Crescioli, L. Fanò, G. Fedi, D. Magalotti, G. Magazzù, L. Servoli, L. Storch, 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.
- [7] 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 Assistantship*, CSE Department, NYU Tandon Sep 2017 – Aug 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 winning 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 intensive training on Standard Model.
- Danube School, Instrumentation in Elementary Particle & Nuclear Physics*, Novi Sad, Serbia Sep 2014
- Received hands-on experience working with modern sensors.

SKILLS

- **Software**
 - C/C++ (5+ years): Boost/STL, Templates, Qt, Eigen, GStreamer, Asio, OpenMPI, ^{1, 2} *continued...*
 - Python (5+ years): Numpy/Scipy, Matplotlib, Multiprocessing, TensorFlow, Pandas, Cython/Swig
 - VHDL (2 years): Xilinx Vivado and ISE, Kintex/Artix 7, Zynq, Sigasi
 - Computer Vision/Graphics ¹: OpenCV, OpenGL, GLSL, libigl, Mitsuba, Unreal Engine
 - High Energy Physics ²: ROOT, Geant4, Garfield++, MCNP, CST EM Studio
 - Other: Matlab, Origin, L^AT_EX, Linux, Git, Pascal/Delphi, CUDA, and a bit of Java
- **Hardware**
 - CAD: Autodesk Fusion 360, Eagle, SketchUp, Adobe Illustrator
 - Manufacturing: 3D Printing (Ultimaker), Laser Cutting (Epilog), CNC (Tormach, Bantam Tools)
 - Electronics: FPGAs (Xilinx), Microcontrollers (TI Tiva C, Arduino), PCB Design and Soldering

LANGUAGES

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