LORENZO NTIBARIKURE

Engineering Systems | Physical Modeling | Customer Focus

ntilau.github.io ntilau ntilau Eindhoven, Netherlands

SUMMARY

My experiences, with a focus on numerical methods, encompass electronic and mechatronic system development and technical sales & support across several industries (Energy & Aerospace, Electronic Design Automation, and Semiconductors).

Leveraging such a background, I am currently helping designers to develop more effectively towards system-level compliance.

EXPERIENCE

Sr Engineer – Design Enablement

NXP Semiconductors

03/2022 – Present Eindhoven, Netherlands

- Implemented electromagnetic simulation flows for SoCs development and electromagnetic interference predictions.
- Enhanced vendor solutions to meet the design and integration requirements of the cloud platform.
- Developed problem-resolution automation scripts and applied AI/ML algorithms for electromagnetic surrogate models.

Technical Account Manager

Ansys

03/2020 – 03/2022 Utrecht, Netherlands

- Drove customer satisfaction by providing multi-disciplinary technical support and managing global presales activities involving the whole Ansys portfolio & ecosystem.
- Led teams to architect flows across disciplines, focusing on requirements and critical success factors.
- Advised global sales and account engineers on addressable initiatives and pipelines with preliminary requirements and solutions visions.

Sr. Applications Engineer

Ansys

01/2019 – 03/2020 Utrecht, Netherlands

- Executed presales activities for electronic systems across industries, supporting high-frequency solutions and EMC flows across EMEA.
- Led technical alignment with customers on automotive electrification and connectivity projects, successfully delivering consulting services and trainings.

Lead Engineer – Testing

Baker Hughes

06/2013 – 12/2018 Florence, Italy

- Led the development of industrial, ATEX compliant, distributed data acquisition systems to streamline tests execution timelines from months to weeks.
- Resolved 5+ electromagnetic interference issues in NPI validations and factory acceptance tests, contributing to best practices.
- Received an innovation award for patent disclosure of the Structural Vibration Monitoring System and multiple rewards for innovative solutions and customer impact.

Startup Co-founder

Università degli Studi di Firenze

06/2012 – 06/2013 Florence, Italy

- Initiated a spin-off, ElectroSoft, to provide efficient numerical codes for design problems.

EDUCATION

Doctor of Philosophy - PhD, Electronics Engineering

Università degli Studi di Firenze

01/2011 – 02/2014 Florence, Italy

School of "RF, Microwaves and Electromagnetics". Computational Methods focus. With grant (Jan 2011 - Jun 2013).

Master's Degree, Electronics Engineering

Università degli Studi di Firenze

10/2007 – 04/2010 Florence, Italy

Erasmus Placement/LLP framework thesis semester at Lehrstuhl für Theoretische Elektrotechnik, Universität des Saarlandes. With grant (Sep 2009 - Mar 2010).

Bachelor's degree, Electrical and Electronics Engineering

Università degli Studi di Firenze

01/2003 - 04/2008 Florence, Italy

AWARDS

EMEA TAM of the Year | Ansys (01/2021)
Award for customer and industry focus

Learn and adapt to win | BHGE (07/2018)
Patent impact award for the disclosure of "Module with sensors arrangement"

Customers determine our success | BHGE (03/2017)
Bronze award for the GE Aviation's Catalyst FETT advanced test instrumentation consulting

Customers determine our success | GE (10/2016)
Bronze award for the successful execution of the vibration monitoring system ZADCO customer structural vibrations acceptance tests

Learn and adapt to win | GE (03/2016)
Bronze award for the co-generation plant cost savings on the SNC1-2 steam turbine performance validation

Learn and adapt to win | GE (10/2015)
Bronze award for the introduction and validation of an effective, cost-saving, structural vibrations digital integration algorithm aimed at accurately deriving speed & displacements measurements from ATEX-compliant accelerometers

- Led team promotion and value proposition pitches to business angels.
- Developed first opportunities in the defense industry.

Doctoral Researcher

Università degli Studi di Firenze

01/2011 – 06/2013 | Florence, Italy

- Researched applied & computational electromagnetics, presenting 10+ papers, advising student theses, and supporting examinations.
- Developed a high-frequency electromagnetic 3D finite element C++ code for domain decomposition and nonlinear formulations.
- Architected a methodology using MathWorks Simulink and Ansys HFSS for electromagnetic compatibility in variable speed drive systems.

Visiting Researcher

Universität des Saarlandes

10/2009 – 02/2010 | Saarbrücken, Germany

- Developed model order reduction in finite element analysis of antenna arrays for fast and accurate beamforming.
- Implemented Matlab code for a 3000x matrix reduction and 300x speedup in antenna pattern computation

R&D Engineer

Università degli Studi di Firenze

12/2007 – 03/2008 | Florence, Italy

- Developed wireless connectivity for a battery-powered avalanche rescue ground penetrating radar, optimizing firmware for fast full-duplex/half-duplex conversion timing.
- Executed the design and assembly of an ISM 868 MHz serial modem PCB prototype with off-the-shelf MCU and Radio (sub-GHz RFFE).
- Achieved successful wireless system resulting in improved signal detection accuracy.

PROJECTS

Bearings loading test rig

Baker Hughes, a GE Company

05/2018 - 12/2018 | Florence, Italy

- Conceptual design of a novel bearings loading test rig aimed at validating bearings NTIs.
- Investigated on modeling methods of EM coupling between power (variable speed drive system) and signals cabling systems to predict potential interference issues.

GE Aviation's Catalyst

Baker Hughes, a GE Company

06/2017 - 12/2018 | Prague, Czech Republic

- Led special instrumentation design and global technical reviews of FETT with design and testing teams (Czech Rep., Poland, USA, Canada).
- Contributed to >4 M$ corss-P&L project and customer satisfaction.

Gas Turbine embedded SAW sensors

Baker Hughes, a GE Company

02/2018 - 12/2018 | Florence, Italy

- Collaborated with University of Florence to investigate the high-frequency numerical modeling of SAW sensors for the accuracy control of temperature measurements.

LM9000: 65 MW aeroderivative gas turbine

Baker Hughes, a GE Company

06/2018 - 12/2018 | Florence, Italy

External focus | GE (06/2014)
Bronze award for the RCA activities on Cessao Onerosa, ADRE monitoring system EMI noise mitigation and customer assurance

Giorgio Barzilai Prize | SIEm (09/2012)
Best paper award for young researchers, for the work "Model order reduction in Finite Element analysis of phased array antennas" presented at the XIX RiNEm

Ph.D. studies grant | UniFi (12/2010)
Full tuition fees and allowance for research on Electromagnetic Compatibility modeling techniques in variable speed drive systems - with GE/Nuovo Pignone

Dean's listing | UniFi (04/2010)
Commissione di Laurea Specialistica in Ingegneria Elettronica presieduta dal Prof. Piero Tortoli (Prot. 1051 n. class. III/9.1.2 del 24 Maggio 2010)

LLP/Erasmus Placement grant | UniFI (10/2009)
Thesis work semester relocation support at Universität des Saarlandes

CERTIFICATION

Professional Engineer, ID:ES2010277049000038
Università degli Studi di Firenze

COURSES

Command of the Message

Ansys

06/2020 | Remote

JAWS: Just Another Way of Selling

Ansys

02/2020 | Paris, France

GE Crotonville: Delivering Customer Impact

GE Oil & Gas

03/2016 | Munich, Germany

Total Quality Lean Six Sigma Green Belt

GE Oil & Gas

06/2014 | Florence, Italy

SKILLS

Engineering | Simulations | Testing | Management | Sales | Strategy | Leadership | Customer Satisfaction | Finite Element Analysis | RF | Electronics | Semiconductors | Scripting | Matlab | C++ | C | Python

LANGUAGES

- Contributed to conceptual instrumentation design and test rigs erection, data acquisition architecture and control system design by technical and HAZOP reviews.

Cross'd

01/2018 - 11/2018 Florence, Italy

- Social networking app PoC based on Bluetooth Low Energy ranging. PoC with Apache Cordova and an AWS EC2 instance

BLE Asset Tracking

07/2017 - 09/2017 Florence, Italy

- Sub 5$/Unit PoC of BLE tags (TI's CC2640) with firmware optimized for long-battery life, aimed at asset tracking and inventory management

GE Power slip-ring digital telemetry

Baker Hughes, a GE Company

04/2017 - 05/2017 Florence, Italy

- Ran Ansys HFSS simulations to optimize signal integrity over slip-ring connections (power supply and ethernet transmission lines)
- Achieved shrinking of the rings spacing leading to manufacturing costs reduction
- 4 weeks-FTE cross-P&L billing and customer satisfaction

Wet gas compressors at KLAB

GE Oil & Gas

02/2016 - 06/2016 Haugesund, Norway

- Designed and procured validation equipment for ATEX zone 1 test bench.
- Developed Ex-d antenna and low noise amplifier system for GPS synchronization on NI's PXI systems.
- Managed IEC 60079-11 simple apparatus compliance on load cells upon using extremely low voltage (1.5 V) Ex-ia Wheatstone bridge conditioners.

Power density compressor

GE Oil & Gas

03/2014 - 05/2016 Florence, Italy

- Led the commissioning Fieldbus Foundation use in testing lab for more than 240 pressure transducers (0.1% uncertainty) upon identifing the proper Firmware configuration which enabled for massive and accurate pressure measurements.
- Managed capacitive vibration probes ATEX-compliance.
- Developed electrostatic numerical model to predict capacitance variation in various surroundings and target shape conditions.
- Contributed to DM37/08 compliance of the test rig contract specification, including power and signaling cabling selection and proper installation.

SNC1-2 steam turbine performance evaluation in 6.2 MW cogeneration plant

GE Oil & Gas

09/2015 - 04/2016 Florence, Italy

- Defined novel pressure hookups method at lower cost and better performance to achieve accuracy controlled inter-stage enthalpy measurements according to ASME PTC 19.11.
- Programmed a CAN to Modbus TCP embedded module to enable static torque measurements on a MagCanica telemetry.

GE-6G PowerGen Module Structural Vibrations Monitoring System

GE Oil & Gas

11/2015 - 03/2016 Massa, Italy

Dutch

English

French

German

Italian

Kirundi

Spanish

PUBLICATIONS

Patents

- L. Ntibarikure, "Module with sensors arrangement," US20180180464A1, 2018. [Online]. Available: https://patents.google.com/patent/US20180180464A1/en.

Books

- L. Ntibarikure, *Contributions to the Art of Finite Elements in Electromagnetics*. Florence, Italy, 2014. [Online]. Available: https://hdl.handle.net/2158/843133.

Journal Articles

- L. Ntibarikure, "Multiphysics simulations for 5g rfics and socs," *Bits&Chips*, 2019.
- F. Barone, A. Signorini, L. Ntibarikure, T. Fiore, F. Di Pasquale, and C. J. Oton, "Fiber-optic liquid level sensing by temperature profiling with an fbg array," *Sensors*, vol. 18, no. 8, 2018. [Online]. Available: https://www.mdpi.com/1424-8220/18/8/2422.
- L. Ntibarikure, G. Pelosi, and S. S. and, "Harmonic balance domain decomposition finite elements for nonlinear passive microwave devices analysis," *Electromagnetics*, vol. 34, no. 3-4, pp. 239–252, 2014. DOI: 10.1080/02726343.2014.877756.
- L. Ntibarikure, G. Pelosi, and S. Selleri, "Efficient harmonic balance analysis of waveguide devices with nonlinear dielectrics," *IEEE Microwave and Wireless Components Letters*, vol. 22, no. 5, pp. 221–223, 2012. DOI: 10.1109/LMWC.2012.2192420.

Conference Proceedings

- L. Ntibarikure, G. Pelosi, and S. Selleri, "Assessment of the performances of gmres(r) using a domain decomposition approach as a preconditioner," in *Proceedings, XX Riunione Nazionale di Elettromagnetismo (XX RiNEm)*, Padua, Italy, 2014. [Online]. Available: https://inspirehep.net/literature/1403858.

- Developped ATEX-compliant distributed acquisition system for more than 150 vibration measurement points, with 40 kHz analog bandwidth, WiFi5 backhaul to storage and real-time monitoring, with GPS or daisy-chain clock distribution synchronization
- Hands-on design of 3D assemblies and BOM for timely delivery and cost optimization of certified equipment in less than 4 months (vs typ. 8 months).
- Introduced and consolidated with third party metrology a software based velocity and displacement real-time computation from accelerometers, achieving direct $150k savings, and subsequent lab processes OPEX benefits.
- Customer value delivered as onsite Turbomachinery Modules structural commissioning with patented solution

NovaLT16 gas turbine, bearings and cooling component tests

GE Oil & Gas

04/2014 - 10/2015 Florence, Italy

- Design and validation of smartbox (field datalogger) for analog signals.
- Defined EMC-aware measurement loops design to achieve noise immunity and enhanced measurement accuracies, rigorously applying EN 61000 guidelines (CENELEC 25).

GE Aviation's GE9X High Pressure Compressor

GE Oil & Gas

01/2014 - 04/2014 Massa, Italy

- High density data acquisition system design for GE Aviation's compressor test in Massa.
- Performed mitigation on EMC noise due to 130 kW variable speed ventilation system

BCL306 and BCL317 centrifugal compressors rotordynamics

GE Oil & Gas

06/2013 - 03/2014 Florence, Italy

- Performed an Ex-p execution of stability's magnetic exciter, contributed to the resolution of customer's opened nonconformity on rotordynamic vibrations upon conducting an electromagnetic interference on Bently Nevada's 3500 RCA.

Finite Elements Software (FES)

Università degli Studi di Firenze

06/2011 - 02/2014 Florence, Italy

- FES is an open source C++ framework for the development of "ad-hoc" simulation software aimed at a rapid implementation of novel numerical methods based on the Galerkin method. Core formulations validated reusing meshes from commercial packages (Comsol, HFSS)

Phased array antennas model order reduction

Universität des Saarlandes

10/2009 - 02/2010 Saarbrücken, Germany

- Developed in Matlab efficient near-to-far-fields formulations for fast electromagnetic radiation computation in large finite elements problems exploiting model order reduction with spectral interpolation for beam steering and pattern angles
- Modeled a large patch antenna array, assessing accuracy and performances through mesh/model export from Ansoft HFSS v11

RS-232 modem in ISM 868 MHz band

University of Florence

01/2007 - 04/2007 Florence, Italy

- Designed and prototyped an 868 MHz wireless link for a ground penetration radar remote control over RS-232 protocol
- C-coded the PIC microcontroller FW and optimized in Assembly to garantee the full-duplex operation over half-duplex TI's CC1100 radio.
- Evaluated the performance of the wireless link in open field

- L. Ntibarikure, "Model order reduction in finite elements analysis of phased array antennas," in *Proceedings, XIX Riunione Nazionale di Elettromagnetismo (XIX RiNEm)*, S. d. E. SiEm, Ed., Roma, Italy, 2012.
- L. Ntibarikure, G. Pelosi, and S. Selleri, "Harmonic balance finite element analysis of third order intermodulation products in ferrite devices," in *Proceedings, XIX Riunione Nazionale di Elettromagnetismo (XIX RiNEm)*, S. d. E. SiEm, Ed., Roma, Italy, 2012.