



Elia Amedeo Attardo, Ph.D.

SENIOR DEVELOPER - ELECTROMAGNETIC SOLUTIONS

◦ DETAILS ◦

eattardo@proton dot me

◦ SKILLS ◦

C++14/17

NVIDIA CUDA C Programming

Fortran

MATLAB Programming

Python

Wolfram Mathematica

MPI3 (Shared Memory)

Git/Gitlab

Agile/Scrum, JIRA

CMake

GNU Make

Linux/Unix

Qt v5.0

◦ LANGUAGES ◦

Italian

English

German

◦ LINKS ◦

www.eattardo.info

www.linkedin.com/in/eattardo

👤 PROFILE

As a seasoned Electromagnetic Solutions Developer at [Altair Engineering](#), I am adept at crafting cutting-edge algorithms for the comprehensive computational electromagnetic software Altair Feko. My proficiency in C++14 and CUDA programming languages complements my expertise in GPU development.

Before joining Altair, I honed my skills as a Research Fellow at the [Polytechnic University of Turin](#), Italy, where I designed efficient and dependable algorithms—accelerated on GPUs—for computational electromagnetic code in biomedical and industrial applications. Earlier in my career, I served as a Research Assistant at the [Thayer School of Engineering at Dartmouth College, USA](#), delving into High-Performance Computing algorithms for a multi-modal image guidance system to enhance the precision of prostate biopsy and disease staging.

I hold a Ph.D. in Electronics and Communications Engineering from the Polytechnic University of Turin.

📁 EMPLOYMENT HISTORY

Senior Developer - Electromagnetic Solutions at Altair Engineering GmbH, Böblingen, Germany

July 2014 — Present

- Devised innovative Integral Equations Formulations for Boundary Value Problems to address real-life, complex metallic structures utilizing the Method of Moments.
- Engineered efficient, rapid, and dependable preconditioners for solving sparse matrix equation systems, achieving a 15x acceleration compared to sequential code using Intel MKL.
- Implemented GPU-based ray tracing acceleration for electromagnetic optics, resulting in a performance increase of up to 20 times compared to a single core.
- Developed novel algorithms for modeling metamaterial objects within Altair Feko's Finite Element Method (FEM) solver.
- Enhanced the performance of the time-based solver, achieving a measured speedup of up to 10x relative to a sequential solver.
- C++ evangelist.

Postdoctoral Research at Polytechnic University of Turin, Turin, Italy

July 2013 — June 2014

I successfully developed and deployed rapid and dependable algorithms, leveraging GPU acceleration, for computational electromagnetic code in biomedical and industrial applications. A portion of the algorithms I created was incorporated into the [MICENEA](#) project.

Researcher at Istituto Superiore Mario Boella, Turin, Italy

September 2011 — June 2014

I designed, simulated, and built RF devices and antennas in complex media. My main contribution was on a joint project with an industrial third party: [RADIODRY](#).

Co-founder at NE Scientific LLC, Boston, MA, USA

January 2011 — December 2013

At [NE Scientific LLC](#), I developed a GPU-based sparse linear solver in medical imaging. The solver was up to 8 times faster than Intel PARDISO MKL on the sequential core.

Research Assistant at Thayer School of Engineering, Dartmouth College, Hanover, NH, USA

January 2011 — August 2011

My research pursuits centered on high-performance computing algorithms tailored for a multi-modal image guidance system aimed at enhancing the precision of prostate biopsy and disease staging. Primarily engaged in a project funded by an NIH Grant (Project Number: 1RC1EB011000-01), I successfully developed algorithms that substantially accelerated various aspects of the aforementioned imaging system by up to 20x, utilizing multiple GPUs (see published [paper](#), [Bioimpedance group](#)).

EDUCATION

Ph.D. Electronics and Communications Engineering, Polytechnic University of Turin, Turin, Italy

2008 — 2011

Computational Methods for Microwave Imaging: Biomedical Applications.

M.Sc., (Laurea Specialistica), Biomedical Engineering, Polytechnic University of Turin, Turin, Italy

2005 — 2007

Microwave Tomography for Breast Cancer Detection.

B.Sc., (Laurea Triennale), Computer Engineering, University of Palermo, Palermo, Italy

2001 — 2004

Noise Reduction in Magnetic Resonance Image.

OTHERS

Teaching,

January 2008 — June 2014

Teaching Assistant on Electromagnetic Fields and Interactions with biological tissues, course delivered to graduated students in Biomedical Engineering at the Polytechnic University of Turin.

Mentoring

January 2008 — June 2014

Mentoring activity of more than ten under-graduated and graduated students in Applied Mathematics, and Biomedical Engineering at the Polytechnic University of Turin.

Professional Services

January 2011 — Present

- IEEE Member of Antennas and Propagation Society.
- Lecturer at courses organized by the European School of Antennas ([ESoA](#)).