Alberto Pettarin, PhD

CURRENT POSITION	Senior Principal Software Engineer, TTS R&D, Cerence AI, Inc.
PROFESSIONAL INTERESTS	Text to Speech Natural Language and Speech Processing Artificial Intelligence High Performance Computing Digital Publishing

PROFESSIONAL EXPERIENCE

Cerence AI, Inc., Turin, Italy

2024-01–present   *Senior Principal Software Engineer*
2019-10–2024-01   *Principal Software Engineer*

- I have been a member of the text-to-speech research and development (TTS R&D) organization of Cerence AI since its spin-off from Nuance Communications.
- I am one of the two architects of the *Neural TTS Framework*, a collection of Python and native libraries to define flexible TTS processing pipelines, which is at the core of products like Cerence Neural TTS and Cerence Reader. (ctypes, NVIDIA Dynamo-Triton, ONNX, NumPy, Python, PyTorch, Tensorflow)
- I am the architect of *Cerence Neural TTS*, a state-of-the-art, AI/LLM-based TTS product for short-form reading and generic prompt applications requiring minimal latency and a synchronous API, based on the Neural TTS Framework. I designed its HTTP API and cloud service containerization, contributed to its implementation, and supervised the implementation of its CI/CD testing infrastructure. (Docker, Flask, Gunicorn, Kubernetes, OpenAPI, Python, RobotFramework)
- I am the architect and main developer of *Voice Actor* and *Cerence Neural TTS Evaluator*, two Web Applications used to showcase and fine-tune Cerence Neural TTS. (Angular, Docker, Flask, Gunicorn, Python, TypeScript)
- While I keep contributing to the day-to-day activities of the TTS Engineering Team, I am increasingly involved in R&D projects spanning multiple organizations (ASR, Cloud, NLG, NLU, Professional Services, TTS), often representing the TTS Engineering Team.
- I also help with team management tasks, such as hosting daily scrum meetings, performing sprint reviews and planning, mentoring junior colleagues, conducting hiring interviews, and acting *ad interim* team manager on behalf of my line manager.
- I contributed to the design and implementation of *Cerence Reader*, a state-of-the-art, AI-based TTS product for reading long-form text, based on the Neural TTS Framework. I designed and implemented the proof-of-concept newscaster cloud service used for showcasing its human-like voice quality. (Celery, Flask, Gunicorn, Python, TensorFlow, NVIDIA Dynamo-Triton)
- I introduced a novel test framework for Cerence TTS products, which helped detecting several latent defects, and significantly simplified and promoted the addition of unit tests for new features being developed. (RobotFramework, Python)
- I played a leading role in the integration of a third-party TTS engine for the Japanese language in the *Cerence TTS Embedded/OnPrem* code base. (C, C++)

Nuance Communications, Inc., Turin, Italy

2019-07–2019-09   *Principal Software Engineer*
2017-06–2019-06   *Senior Software Engineer*

- I was a member of the text-to-speech research and development (TTS R&D) team.
- I contributed to the day-to-day activities of the team, including development of new product features, defect triaging and resolution, code reviews, and maintenance or extension of test suites. (C, Python)
- I designed and implemented a Python wrapper providing a unified interface on top of the C APIs of the two main TTS products (*Vocalizer Embedded* and *Vocalizer Server*). This wrapper was used to drive TTS engines within a proprietary Python test framework, and it greatly reduced the cost of voice acceptance testing, in terms of computing resources and maintenance effort. (Python, Python C API)
- I participated in a project of internal innovation, focussing on improving the quality and performance of NLP modules in the TTS core engine and on facilitating the work of language and voice developers through Lua scripting. (C, Lua)
- Occasionally I conducted hiring interviews and acted *ad interim* team manager on behalf of my line manager.

Freelance, Venice, Italy

2015-07–2017-05   *Freelance Python/C Developer*
- Selected projects: I tuned and extended an optimization MILP kernel for industrial packing applications (Java, C, CPLEX); I developed C extensions for computing MFCC and DTW for the forced alignment package `aeneas` (Python, C); I maintained the `Menestrello` app (Cordova, JavaScript, Java, Objective-C); and I designed the `aeneas` Web application (Python, Flask).

ReadBeyond (formerly, Smuuks), Padova, Italy

2012-09–2015-06   *(Co-Founder, CEO, and) Head of Research*
- ReadBeyond (https://www.readbeyond.it/) was a research lab which developed innovative solutions for creating, distributing, and enjoying digital contents. I was the lead developer of our two main projects: `aeneas` (automated audio/text synchronization) and `Menestrello` (Android/iOS app for reading+listening EPUB 3 Audio-eBooks).

University of Padova, Padova, Italy

2012-11–2013-12   *Research Collaborator*
- I supervised student projects and theses involving mobile platforms and eBooks.

2012-02–2012-10   *Research Collaborator*
- Working on a Data Mining Research Project funded by Tektronix
- I devised new algorithmic techniques for mining quantitative association rules in 5G antenna equipment logs, and implemented a proof-of-concept DM tool.

2008-10–2008-12   *Research Assistant*
- European Union research grant to study diameter and expansion of Bluetooth Topology graphs, under FP6-IST/IP Project AEOLUS.

PROGRAMMING
- **Excellent**: Click, ctypes, Flask, Gunicorn, Python C API, Python
- **Good**: C, Docker, Kubernetes, Lua, NumPy, NVIDIA Dynamo-Triton, ONNX, OpenAPI, PyTorch, RabbiMQ, SSML, TensorRT, YAML
- **Routine use of**: Artifactory, Awesome WM, Bash, BitBucket, Debian GNU/Linux, GCC, Git, Jenkins, Jira, MacOS, SSH, Ubuntu, Vim, Windows 11
- **Also worked with**: Android, Angular, Arduino, C++, Celery, clang/LLVM, Cordova, CPLEX, Grafana, iOS, Java, JavaScript, nginx, Objective-C, Prometheus, PyTables, RaspberryPi, Redis, rq, SciPy, TensorFlow, TypeScript, XML
- **Digital Publishing**: EPUB 2/3, EPUB 3 Media Overlays, LaTeX, MOBI/KF8, XML

SELECTED FREE SOFTWARE/OPEN SOURCE PROJECTS
- **aeneas**: automated synchronization of audio and text (Python, NumPy, C) ☑
- **glyphIgo**: a Swiss Army knife for dealing with fonts and EPUB eBooks (Python) ☑
- **ipapy**: a module to work with IPA strings (Python) ☑
- **Minstrel/Menestrello**: Android/iOS app for enjoying EPUB 3 Audio-eBooks (Cordova, Javascript, Objective-C, Java) ☑
- **Penelope**: a multi-tool for creating, editing and converting dictionaries (Python) ☑

Full list: https://github.com/pettarin/ and https://github.com/ReadBeyond/

EDUCATION   **Brown University**, Providence, RI, USA

2010-01–2011-06   *Visiting Research Scholar*
- Host: Professor Eli Upfal
- Head Teaching Assistant for CSCI1580 "Information Retrieval and Web Search" (Spring'10 and Spring'11)

University of Padova, Padova, Italy

2009-01–2011-12   *PhD Information Engineering (Dottorato di Ricerca)*
- Thesis: Graph Models of Information Spreading in Wireless Networks
- Advisors: Professor Geppino Pucci jointly with Professor Andrea Pietracaprina
- I studied stochastic graph models of information spreading processes in wireless networks, with emphasis on mobile networks.

2009-01   *Chartered Engineer Examination (Esame di Stato per l'Albo degli Ingegneri)*

2008-09–2012-12 *Reviewer*
- For 2 Journals and 10 Conferences in Theoretical Computer Science and Distributed Computing.

University of Padova, Padova, Italy

2007-10–2009-09 *Teaching Assistant*
- 4 editions of "Introduction to Computer Programming" and "Calculus I" for engineers.

University of Padova, Padova, Italy

2006-10–2008-07 *MSc Computer Engineering (Laurea Magistrale)*
- Thesis: On the Diameter of Bluetooth-Based Ad Hoc Networks
- Final grade: 110/110 *cum laude*, GPA 29.85/30 over 13 exams, 9 exams *cum laude*

University of Padova, Padova, Italy

2003-10–2006-07 *BSc Information Engineering (Laurea)*
- Thesis: DocTrivXlet: a Java Micro Edition Application for the MFP Ricoh Aficio 2051
- Final grade: 110/110 *cum laude*, GPA 29.17/30 over 21 exams, 7 exams *cum laude*

HONOURS AND AWARDS	**2024-01** Cerence AI Formula 1 Employee Award, Turin, Italy

2024-01 Cerence AI Formula 1 Employee Award, Turin, Italy
2021-02 Cerence AI Driver CEO Quarterly Recognition Award, Turin, Italy
2019-05 Nuance Communications Spot Award, Turin, Italy
2018-06 Nuance Communications Spot Award, Turin, Italy
2014-11 First Prize at the "Librinnovando Awards 2014", Milan, Italy
2012-09 Fellowship to attend *The International Summer School on Entrepreneurial Management and Innovation 2012*, Desenzano del Garda, Italy
2010-01 "Fondazione Ing. Aldo Gini" Fellowship to conduct research abroad (2 years)
2008-11 "Leonardo Melandri" Fellowship to attend *The 4th Bertinoro Workshop on Randomized Algorithms and Graphs*, Bertinoro, Italy
2003-10 "Alfiere del Lavoro" Prize of the President of Italy to the best 25 high school students

PUBLICATIONS
- List from the DBLP: http://dblp.uni-trier.de/pers/hd/p/Pettarin:Alberto.html
- Preprints: https://www.albertopettarin.it/cv.html

PRESENTATIONS
- *Internal TTS Training Series*, Cerence AI, online, 2019–2025. Topics included: Serving Neural Network Models With NVIDIA Triton Inference Server, Message Passing (RabbitMQ) In Cerence Neural TTS, Type Annotations And mypy.
- *Internal TTS Training Series*, Nuance Communications, online, 2017–2019. Topics included: CPython Internals, FFI With Python, Lua And Lua C Bindings, Testing With RobotFramework.
- *The Journey of aeneas: a Python Adventure in Text and Speech*, PyCon Italia, Florence, Italy, 2017-04-08
- *EPUB 3 Audio-eBooks and Reading Apps*, CILP 2016, Feltre, Italy, 2016-04-16
- *Improving Literacy With Audio-eBooks*, Librinnovando 2014, Milan, Italy, 2014-01-14
- *Anatomy of a Strange Digital Project: Dante meets Queneau*, EbookCamp 2012, Loreto, Italy, 2012-09-29
- Mini-course: *Pills of LaTeX*, PhD School in Pharmaceutical Sciences, Padova, Italy, 2012
- *LaTeX to EPUB: a Poor Man's Guide to Publishing Math Ebooks*, EbookCamp 2011, Loreto, Italy, 2011-10-23
- *Tight Bounds on Information Dissemination in Sparse Mobile Networks*, PODC 2010, San Jose, CA, USA, 2010-06-08
- *On the Expansion and Diameter of Bluetooth-Like Topologies*, ESA 2009, Copenhagen, Denmark, 2009-09-09
- Mini-course: *LaTeX's Fabulous World*, IEEE Student Branch, Padova, Italy, 2008

LANGUAGES
Italian (native), English (fluent)

CONTACT INFORMATION
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LAST UPDATE
October 23, 2025
I authorize the use of my personal data in accordance with the Italian Privacy Protection Law (30/06/2003, n. 196/03).