

## Curriculum Vitae

of Alessandro Berti, born in Soave (VR), Italy, on 20/02/1989  
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## Job experiences:

### Software Engineer @ Center of Process Intelligence, Fraunhofer FIT

Sep 2019 – now

- Lead developer of the open-source process mining library *PM4Py* (with more than 700.000 downloads) and the process mining tool *PMTk* (based on *PM4Py*, web services in Flask, and a front-end in Angular; available on-premise and as a standalone tool).
- Involvement as a software expert in data analysis projects on SAP ERP.

### Software Engineer @ Process and Data Science group, RWTH Aachen

May 2018 - now

- Organization of practical courses in the field of conformance checking. In particular, holder of the “Process conformance checking in Python” practical course for the past seven semesters.
- Supervision of BSc and MSc theses on process mining and big data analysis topics.
- Development of prototypal process mining software:
  - Extraction of event data from SAP: O2C, P2P, AP, AR
  - *PM4Py-GPU*: a high-performance process mining library running on the NVIDIA RAPIDS framework.
  - *PM4JS*: a general-purpose process mining library in Javascript.
- Research:
  - Object-centric process mining: development of the OCEL standard for storing object-centric event logs; process discovery on OCEL(s) using object-centric directly-follows graphs and Petri nets.

### Research Engineer @ SIAV S.p.A. (Italy)

March 2015 –  
April 2018

- Application of process mining to processes implemented using document flows in the Archiflow document management application.
- Automation of an invoice processing system. Issuing of electronic invoices.
- Development of some modules in document management software (Archiflow, Silloge): full-text search, text classification, and process mining.

### Research Assistant @ University of Padova (Italy)

March 2014 –  
March 2015

- Development of social network analysis and resource profiling techniques.
- Integration of social network analysis in the SIAV’s document management

application.

## Main skills:

**Programming:** Python (lead developer of PM4Py and PM4Py-GPU; text classification) along with its ecosystem (Pandas, Scikit-Learn, Numpy); Javascript (lead developer of the process mining toolkit PMTk, and of the open-source library PM4JS) along with Node.JS and Angular.

**Consultancy:** involvement in process mining projects @ Fraunhofer FIT.

**Data analysis:** deep knowledge of process mining in different areas (process discovery, conformance checking, simulation). Usage of dataframe technologies (Pandas, Polars, NVIDIA RAPIDS, Apache Spark), SQL (Oracle, DuckDB, SQLite), and non-SQL (MongoDB, Redis) to extract and pre-process event data. Data extraction and processing from popular information systems (SAP ERP, Dynamics CRM, Camunda). Data visualization: Graphviz (PM4Py, PM4JS), Matplotlib (PM4Py), Plotly (PMTk, PM4JS).

**Operational:** deployment of applications as Docker containers (both in the context of SIAV Silloge and PMTk), and in enterprise web/application servers (Apache, IIS, NGINX / UWSGI). Basic knowledge of CI/CD pipelines (for the PM4Py and PMTK projects). Base knowledge of the Nameko framework.

## Main publications:

- Berti, Alessandro, van Zelst, S.J., van der Aalst, W.M.P. (2019): **Process Mining for Python (PM4Py): Bridging the Gap Between Process-and Data Science**. In: Proceedings of the ICPM Demo Track 2019, co-located with 1st International Conference on Process Mining (ICPM 2019), Aachen, Germany, June 24-26, 2019. pp. 13-16 (2019).
- Berti, Alessandro, and Wil van der Aalst. **Extracting multiple viewpoint models from relational databases**. Data-Driven Process Discovery and Analysis. Springer, Cham, 2018. 24-51.
- Berti, Alessandro, and Wil MP van der Aalst. **Reviving Token-based Replay: Increasing Speed While Improving Diagnostics**. ATAED@ Petri Nets/ACSD. 2019.
- Berti, Alessandro, Sebastiaan J. van Zelst, and Wil MP van der Aalst. **PM4Py Web Services: Easy Development, Integration and Deployment of Process Mining Features in any Application Stack**. BPM (PhD/Demos). 2019.
- Berti, Alessandro, et al. **An Event Data Extraction Approach from SAP ERP for Process Mining**. International Conference on Process Mining. Springer, Cham, 2022.

**Studies:** Mathematics (Bsc 2008-2011, Msc 2011-2013) @ University of Padova.

**Languages:** English (C1), German (A1).