

# Claudio Giuliano

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## SHORT BIO

Claudio Giuliano is an expert in artificial intelligence and a Senior Researcher at Fondazione Bruno Kessler (FBK), within the Intelligent Digital Agents (IDA) unit. His research focuses on Retrieval-Augmented Generation (RAG), agentic AI architectures, and interpretability methods for large language models (LLMs), with an emphasis on improving reliability, transparency, and controllability in applied NLP systems.

He has extensive experience in AI research and technology transfer, spanning both academic and industrial settings. Previously, he was a Senior AI Consultant at Taylor Francis, where he collaborated with the R&D team to design and deliver AI-driven research products. Before that, he served as Head of the Future Media group at FBK, leading research in virtual assistants, conversational question answering, natural language processing, information extraction, social media analysis, and machine learning. In this role, he also led the development of a machine translation evaluation platform for eBay.

He is the author of more than 80 peer-reviewed publications and has won several international shared tasks, including SemEval 2007 (lexical substitution), Senseval-3 (word sense disambiguation), and Evalita 2009 (entity recognition and detection). He has also developed widely used NLP systems such as The Wiki Machine, a multilingual text analysis platform supporting over 30 languages, and MT-Equal, a system for evaluating machine translation quality. In 2012, he founded Machine Linking, a FBK spin-off focused on text analysis services, which he led for two years.

## EMPLOYMENT HISTORY

**Nov 2026-present** Senior Researcher at Fondazione Bruno Kessler (FBK), within the Intelligent Digital Agents (IDA) unit.

**Nov 2022-Oct 2025** Senior AI Consultant at Taylor & Francis.

**Jan 2015-Oct 2022** Fondazione Bruno Kessler, Future Media group, Trento, Italy - Head of unit. In the early years, the group (10 engineers and scientists) focused on technology transfer of NLP research to companies and organizations, for example, eBay and the Wikimedia Foundation, and, currently, is developing and experimenting conversational agents in the health sector.

**Dec 2012-Nov 2014** CEO of Machine Linking S.r.l. The company delivered a text analysis API.

**Jan 2008-2014** Fondazione Bruno Kessler, Human Language Technologies Group, Trento, Italy - Research scientist. Researcher in the NLP field: ontology population, semantic parsing, entity linking, and virtual assistant technology.

**Jan 2003-Dec 2007** ITC-irst, Cognitive and Communication Division, Trento, Italy - Research Consultant. Researcher in the NLP field: IE and word sense disambiguation.

**May 1999-Dec 2002** Istitut Cultural Ladin and ITC-irst, Cognitive and Communication Division, Trento, Italy - Software Engineer. Developed lexical resources for a minority language.

## RESEARCH INTERESTS

**Retrieval-Augmented Generation** Development and evaluation of Retrieval-Augmented Generation systems.

**Agentic AI** Research on agentic AI architectures for autonomous reasoning, planning, and tool use.

**LLM Interpretability** Research on interpretability methods for large language models to improve the reliability and transparency of NLP applications.

**Chatbot** Development of AI-based chatbots able to provide psychological support to patients with chronic diseases and answer questions in health and medical practice using deep learning.

## RESEARCH PROJECTS

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**KRAKEN** KRAKEN is an EU-funded project that focuses on the development of a brokerage and market platform for personal data guaranteeing security and digital privacy. Role: provider of social media analysis (2020-2022).

**CREEP** Cyberbullying Effects Prevention. Co-funded by EIT Digital. Role: researcher (2018-2019)

**SUPERSEDE** Feedback-driven approach to the life cycle management of software services and applications, with the ultimate purpose of improving users quality of experience, funded by the European Union. Role: researcher (2017-2018)

**StrepHit** Wikidata Statements Validation via References. Funded by the Wikimedia Foundation. Role: advisor (2017-2019)

**Smart Retail** The activity Smart Retail aims to boost local businesses for instance by introducing ways to understand customer movement, intentions and their shopping profile and to offer more personalized services. Co-funded by EIT Digital. Role: researcher (2015-2017)

**DIRHA** The project addresses the development of voice-enabled automated home environments based on distant-speech interaction in different languages, funded by the European Union. Role: researcher (2012-2014)

**CoSyne** Multi-Lingual Content Synchronization with Wikis, funded by the European Union. Role: researcher (2010-2011)

**ITCH** Intelligent technologies for cultural visits and mobile education is a joint project between Italy and Israel, sponsored by the Italian Ministry of University and Research and by the Autonomous Province of Trento. Role: researcher (2008-2011)

**COPILOKS** COnent Processing by Integrating Logical and Statistical Knowledge. Funded by FBK. Role: researcher (2009-2011)

**X-Media** Large Scale Knowledge Sharing and Reuse across Media. A four-year multi-million euro integrated project funded by the European Union, X-Media addresses the issue of knowledge management in complex distributed environments. Role: researcher (2006-2010)

**Ontotext** From Text to Knowledge for the Semantic Web, FUP-2004 program, Ontotext exploits text processing and automatic reasoning technologies to extract knowledge from texts and organise it conceptually in an ontology. Role: researcher (2005-2006)

**Dot.Kom** Designing adaptive infOrmation exTRaction from text for KnOwledge Management (Dot.Kom), a STREP project funded by the European Union on use of information extraction from documents for knowledge management. Role: researcher (2003-2005)

**TALES** Trattamento automatico Ladino e Sardo (Tales), a regional project for developing a common interface to access multilingual dictionaries and corpora. Role: software engineer (1999-2002)

## RESEARCH CHALLENGES

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**NEEL-IT** Named Entity rEcognition and Linking in Italian Tweets task, second best performing system (2016)

**SemEval-2** Multi-Way Classification of Semantic Relations Between Pairs of Nominals task, second best performing system (2010)

**Evalita** Entity Recognition tasks (2009), best performing system for

- ◇ Named Entity Recognition
- ◇ Local Entity Detection and Recognition

**WePS-2** Second Web People Search Evaluation Workshop, fourth best performing system out of 16 (2008)

**ACE** Automatic Content Extraction 2008 Evaluation (2008)

**SemEval** Semantic Evaluation (2007)

- ◊ English Lexical Substitution Task, best performing system out of 9
- ◊ Classification of Semantic Relations between Nominals, second best performing system out of 10
- ◊ English Lexical Sample, best performing system out of 13

**Pascal Challenge** Evaluation of Machine Learning for Information Extraction (2004)

**SENSEVAL-3** WSD competition (2004), best performing system in the following tasks

- ◊ English lexical sample (course grained evaluation)
- ◊ Italian lexical sample
- ◊ Spanish and Catalan lexical sample

## SOFTWARE

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**Covibot** is a chatbot developed to answer frequent questions about the Covid-19 emergency delivered on the Web site of the Autonomous Province of Trento healthcare authority

**Motibot** is a virtual coach developed to provide psychological support to patients with chronic diseases tested on a few tens of real diabetic patients

**MT-equal** is a Web application for human evaluation of machine translation quality developed in PHP and JavaScript (OSS)

**Pokedem** is a Web application for automatic social media management developed in Java, PHP, and JavaScript

**The Wiki Machine** is a text analysis suite (text categorization, entity disambiguation and linking, semantic enrichment) available for 30+ languages developed in Java (OSS)

**jLSI** is a library for Latent Semantic Indexing developed in Java (OSS)

**jWeb1T** is a library for efficiently searching the Web 1T 5-gram corpus developed in Java (OSS)

**jSRE** is an application for Relation Extraction from text developed in Java (OSS)

**jInFil** is a library for Instance Filtering developed in Java (OSS)

**jFex** is a Feature Extraction tool developed in Java for Natural Language Processing applications based on machine learning techniques (OSS)

**Ties** is an adaptive Information Extraction system developed in Java (OSS)

**jMorpho** is a Java tool for generating a dictionary from morphology rules (OSS)

**Toolbox for lexicographer** is a web application for querying lexical resources

**DILF** is an electronic dictionary developed in Java released as web and stand-alone application

## STUDENT SUPERVISION AND TEACHING

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- 2019-2020** Syed Muhammad Adeen Raza (intern and Master thesis). Currently, user experience engineer, Leica Geosystems
- 2019** Valeria Mayora (intern)
- 2019** Giacomo Zara (intern and Master thesis). Currently, Ph.D. student, University of Trento
- 2015-2019** Yaroslav Nechaev (Ph.D. student). Currently, applied Scientist, Amazon Alexa
- 2013-2017** Marco Fossati (Ph.D. student). Currently, project Lead, Wikimedia Foundation.
- 2017** Andrei Coman (intern and Bachelor thesis). Currently, research Assistant, Idiap Research Institute and Ph.D. student, Ecole Polytechnique Fdrale de Lausanne.
- 2017** Cosimo Persia (intern).
- 2012-2013** Alessio Palmero Aprosio (Ph.D. student). Currently, researcher, FBK.
- 2008-2012** Kateryna Tymoshenko (Ph.D. student). Currently, research scientist AI, Philips
- 2012** Angeliki Lazaridou (inter). Currently, research scientist, DeepMind
- 2009** David Tomás (inter), Currently, lecturer, University of Alicante
- 2007, 2008, 2009** Invited lecturer: “Un toolbox per la lessicografia”, course of “Informatica Umanistica”, Università degli Studi di Trento
- 2003** Assistant Professor, Intelligenza Artificiale, Scienze e tecniche di Psicologia Cognitiva Applicata, Università degli Studi di Trento, Polo di Rovereto

## EDUCATION

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- 1999** University of Torino, Dept. of Computer Science, Laurea degree
- 1996** King’s College London, Erasmus Program

## COMPUTER SKILLS

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- Programming languages** Java (20+ years of experience), PHP and JavaScript (5+ years of experience), and Python (4+ years of experience)
- Machine learning** TensorFlow, PyTorch, and Keras
- DB and Search** MySQL, Elasticsearch, and OpenSearch
- Web development** Symfony, Spring, Django
- Operating Systems** Mac OS X and Linux

## PERSONAL DETAILS

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- Date of Birth** 27 December 1972
- Nationality** Italian
- Gender** Male
- Languages** Italian (native language), fluent spoken/written English

## SELECTED PUBLICATIONS

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- Giulia Bassi, Claudio Giuliano, Alessio Perinelli, Stefano Forti, Silvia Gabrielli, and Salcuni Silvia. “Motibot - The Virtual Coach for Healthy Coping Intervention among adults with diabetes: A Proof-of-Concept study.” *JMIR Human Factors* (2021).
- Giulia Bassi, Ivan Donadello, Silvia Gabrielli, Silvia Salcuni, Claudio Giuliano, and Stefano Forti. “Early development of a Virtual Coach for Healthy Coping Interventions in Type 2 Diabetes Mellitus: A validation study (Preprint).” *JMIR Formative Research* (2021).
- Yaroslav Nechaev, Francesco Corcoglioniti, and Claudio Giuliano. “SocialLink: exploiting graph embeddings to link DBpedia entities to Twitter profiles.” *Prog. Artif. Intell.* **7**, 251–272 (2018).
- Marco Fossati, Emilio Dorigatti, and Claudio Giuliano. “N-ary Relation Extraction for Simultaneous T-Box and A-Box Knowledge Base Augmentation.” *Semantic Web* (2017).
- Sara Tonelli, Claudio Giuliano, and Kateryna Tymoshenko. “Wikipedia-based WSD for multilingual frame annotation.” *Artificial Intelligence* **194**, 203–221 (2013).
- Claudio Giuliano, Alfio Gliozzo, and Carlo Strapparava. “Kernel Methods for Minimally Supervised WSD.” *Computational Linguistics* **35** (2009).
- Claudio Giuliano, Alberto Lavelli, and Lorenza Romano. “Relation Extraction and the Influence of Automatic Named Entity Recognition.” *ACM Transactions on Speech and Language Processing* **5** (2007).
- A complete list of publications is available at <http://scholar.google.it/citations?user=Ty62y4QAAAAJ&hl=en>.

## REFERENCES

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References are available upon request.