UNIVERSITÀ DEGLI STUDI DI NAPOLI FEDERICO II

DOTTORATO DI RICERCA / PhD PROGRAM IN
## INFORMATION TECHNOLOGY AND ELECTRICAL ENGINEERING

Seminar announcement

Tuesday June, 7th, Time: 10:00 – 12:00

Room Seminar, Floor I, Building 3, DIETI - Via Claudio, 21 - NAPOLI

Online on MS Teams (code: **jnxqh3b**):

Link: https://teams.microsoft.com/l/team/19%3agCflgCOe7qasFFjRFS2gz0E0bhvFk3cLfBB2N-UG4X41%40thread.tacv2/conversations?groupId=5775ad02-278d-441a-8852-5a560b1edca8&tenantId=2fcfe26a-bb62-46b0-b1e3-28f9da0c45fd
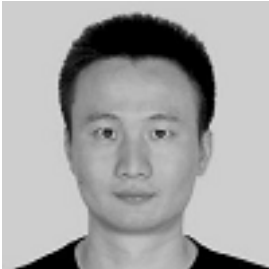
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Probing and infusing biomedical knowledge for pre-trained language models

Abstract: Pre-trained language models (PLMs) have orchestrated incredible progress on myriads of few- or zero-shot language understanding tasks, by pre-training model parameters in a task-agnostic way and transferring knowledge to specific downstream tasks via finetuning. In this talk I will spend about 1 hour to introduce the basics of language models and its development history, ranging from bag-of-words, word2vec to Transformers. And tell about how to use PLMs for different downstream tasks, such as document classification, question answering and natural language inference.

Leveraging factual knowledge from knowledge graphs (KGs) to augment PLMs is of paramount importance for knowledge-intensive tasks, such as question answering and fact checking. Especially in the biomedical domain where public training corpora are limited and noisy, trusted biomedical KGs are crucial for deriving accurate inferences. In the second hour, I will introduce one our proposed knowledge infusion approach, named Mixture-of-Partitions (MoP), which is to infuse factual knowledge based on partitioned KGs into PLMs, and automatically route useful knowledge from these adapters to downstream tasks. Knowledge probing is another crucial task for understanding the knowledge transfer mechanism behind the PLMs. Despite the growing progress of probing knowledge for PLMs in the general domain, specialised areas such as biomedical domain are vastly under-explored. I will introduce a new biomedical knowledge probing benchmark, namely MedLAMA, and a novel probing approach, namely Contrastive Probe, for probing biomedical knowledge of PLMs.

Lecturer short bio: Zaiqiao is currently a Lecturer of the University of Glasgow, and is based within IR Group of the IDA Section of the School of Computing Science. He was previously working as a Postdoctoral Researcher at the Language Technology Laboratory of the University of Cambridge, and at the IR Group of the University of Glasgow, respectively. Zaiqiao obtained his Ph.D. in computer science from Sun Yat-sen University in December 2018. His research interests include information retrieval, recommender systems, graph neural networks, knowledge graphs and NLP. He has published more than 50 papers at top-tier ML, NLP and IR conferences and journals.

For information: Prof. Francesco Cutugno (DIETI, UniNA) – francesco.cutugno@unina.it *(organizer)*