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Primjena suvremenih alata umjetne inteligencije u doktorskom istraživanju

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Zavod za primijenjeno računarstvo

Svjedoci smo brzog razvoja tehnologija umjetne inteligencije (engl. *Artificial Intelligence*) koje koriste velike skupove podataka općeg znanja i omogućuju širok spektar primjena uz jednostavnost korištenja i otvorenost pristupa. Štoviše, gotovo svakodnevno razvijaju se novi alati koji pružaju brojne mogućnosti za napredno oblikovanje teksta na više prirodnih jezika, automatizirano generiranje multimedije, obradu djelomično strukturiranih ili nestrukturiranih podataka, vizualizaciju, statističku analizu rezultata istraživanja i druge zadatke čije je uspješno rješavanje prethodno od korisnika zahtijevalo bitno višu razinu stručnosti i ovladavanja područjem problema. Cilj predavanja je pružiti doktorskim studentima uvid u primjenu suvremenih alata umjetne inteligencije, posebice razgovornih agenata (engl. *Chatbots*) temeljenih na velikim jezičnim modelima (engl. *Large Language Models*, LLM), u akademskom okruženju te ih potaknuti na učinkovitiju provedbu aktivnosti tijekom doktorskih istraživanja. U praktičnom dijelu predavanja prikazati će se neki alati te primjeri njihovog korištenja u zadacima s kojima se doktorandi najčešće tijekom susreću tijekom izrade doktorske disertacije. Posebna pažnja posvetit će se pravnim aspektima autorstva i izrade izvornih doprinosa te etičkoj odgovornosti za rezultate dobivene korištenjem tehnologija umjetne inteligencije.

About the speaker

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Marko Horvat is an Assistant Professor of computer science at the University of Zagreb, Faculty of Electrical Engineering and Computing, Croatia. He earned his Diploma in 1999, MSc in 2007, and PhD in 2013, all from University of Zagreb, Faculty of Electrical Engineering and Computing, specializing in computer science, mobile computing, and artificial intelligence.

During his academic career he has published more than 100 papers in international conference proceedings and peer-reviewed scientific journals, and book chapters. In addition to his research contributions, he has developed several university-level textbooks and professional teaching manuals. He has also led numerous workshops particularly focused on artificial intelligence, machine learning, and data science. He is engaged in editorial and review activities, serving as an editor for international journals and is a member of many editorial boards of international journals and conference program committees. He regularly reviews higher education study programs, university textbooks, and scientific research projects. Reviewer for many respected journals and international conferences, as well as study programs and project proposals for foreign science foundations.

He has participated in numerous national and EU scientific projects (MZO, HRZZ, Erasmus, ESF, EU NPOO, Horizon2020, COST) as a project leader, researcher, and domain expert. He also led and participated in many national development projects with industry and government.

He taught numerous undergraduate and master university courses at different higher education institutions. In addition, he supervised over 90 B.Sc. and M.Eng. dissertations in informatics, computer science, and AI.

Currently serves as Chair of the IEEE Technology and Engineering Management Chapter (TEMS) in IEEE Croatia Section, and a member of the IEEE Croatia Section's Executive

Board. In addition, he currently heads the Scientific Council of the Croatian Mine Action Center – Testing Center for Development and Training (HCR-CTRO).

Previously, he served as Vice-Dean for Science, International Cooperation, and New Study Programs at the Zagreb University of Applied Sciences (TVZ), Croatia, Senior Lecturer and Lecturer in computer science. During his tenure at TVZ he founded and led Artificial Intelligence Laboratory (AI Lab) and introduced new AI-focused courses into the curriculum. Also, he was the Director of the Undergraduate Professional Study Program in Computing at TVZ. In addition, previously he was affiliated with the University of Zadar, Croatia as an external Associate Professor.

His primary research interests are in applied AI and machine learning, particularly automated reasoning, formal knowledge representation, information retrieval procedures, affective computing, and the semantic web. He is currently leading a research team as part of the RANMI (Representation and analysis of mining data using artificial intelligence methods) science project, which is developing a humanitarian demining data observatory portal utilizing AI-driven expert systems and decision support systems. In parallel, his team is integrating generative AI (GenAI) and natural language processing (NLP) technologies into next-generation educational platforms and advanced spellchecking services.

Marko Horvat is an active promoter of science and STEM education, regularly participating in expert panels, educational activities and making media appearances, addressing a wide range of topics related to computer science, artificial intelligence, and the impact of disruptive technologies. Additionally, he has delivered numerous invited and public lectures, further contributing to the popularization of science and inspiring the next generation of STEM professionals.

He is a Senior Member of the IEEE and a member of the Croatian Astronomical Society (HAD). He is also an active member of the IEEE Computational Intelligence Society, IEEE Geoscience and Remote Sensing Society, IEEE Technology and Engineering Management Society, and IEEE Big Data Community.