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Description of the funded research project
1st Call for H.F.R.I. Research Projects to Support Faculty
Members & Researchers and Procure High-Value
Research Equipment



Title of the research project: Sign Language Recognition in Education

Principal Investigator: Gerasimos Potamianos

Reader-friendly title: SL-ReDu

Scientific Area: Engineering Sciences & Technology

Institution and Country: University of Thessaly, Greece

Host Institution: University of Thessaly

Collaborating Institution(s): Athena Research Center / ILSP

**Project webpage
(if applicable):**



Budget: 188,000 Euros

Duration: 36 months

Research Project Synopsis

SL-ReDu constitutes an innovative research project that exploits recent progress in the deep learning and computer vision fields to advance the state-of-the-art in video-based automatic recognition of the Greek Sign Language (GSL), while focusing on the use-case of GSL education as a second language (L2). The project main objective is to address the need for standardized teaching and efficient self-assessment of GSL as L2, by conducting interdisciplinary research in engineering and humanities. SL-ReDu is a three-year effort, carried out in collaboration of two Departments at the University of Thessaly (Electrical and Computer Engineering, Special Education) and the Athena Research and Innovation Center, and it is funded by the Hellenic Foundation for Research and Innovation.

Project originality

The SL-ReDu project is developing innovative computer vision and machine learning algorithms for video-based automatic recognition of the Greek Sign Language (GSL), considerably advancing the current state-of-the-art in the field. The project is harvesting existing GSL data resources, but also collecting a new GSL dataset that includes multiple signers, a large number of lemmas and continuous phrases, as well as finger-spelled signing, relevant to the SL-ReDu use-case. Further, the project will integrate the GSL recognizer under development into a prototype demonstrator system, focusing on the innovative use-case of education, namely that of L2 learning of GSL. This prototype system will be used to evaluate student GSL performance at the Department of Special Education of the University of Thessaly in the context of learning and evaluation for the compulsory course “Introduction to Greek Sign Language” of the department curriculum, which constitutes another novel aspect of the project.

Expected results & Research Project Impact

The outcomes of the SL-ReDu project will have significant impact to the research community, given the ever increasing level of activity in the computer vision and machine learning fields, as well as the re-emerging interest in the field of video-based sign language recognition. In addition, the SL-ReDu prototype demonstrator will have significant societal and educational impact: Its innovative technological features will address the needs of the large population of Greek Sign Language (GSL) students and trainees who will benefit from the developed solutions to learning and self-assessment, as well as address the needs of the small number of certified GSL teachers who will benefit from the developed tools for student performance evaluation. The SL-ReDu system will thus lower teaching and evaluation costs of GSL dramatically.

The importance of this funding

This funding enables innovative research in the field of Greek Sign Language recognition for the partners of this project, and it will yield significant technological, societal, and educational impact. It also advances collaboration between the Schools of Engineering and Humanities at the host institution, as well as collaboration across the university and research center ecosystem in Greece. Further, it advances work-force specialization by training Ph.D. students in the topics of computer vision, machine learning, sign language recognition, and learning evaluation, it enhances the visibility of Greek research internationally through the project dissemination activities, and it improves computational equipment and resources at the partner sites, thus enabling the achievement of the project goals and enhancing competitiveness of the project partners at the international research level.



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