CAT-SL: Deploying Machine Learning & Computer Vision for Sign Language teaching

Konstantinos Karampidis[1], Manos Vasilakis[1], Maria Christofaki[1], Giorgos Papadourakis[1],
Dimitrios Kosmopoulos[2], Klimis Antzakas[2], Venetta Lampropoulou[2], Nuno Escudeiro[3], Tiago Oliveira[3],
Ben Elsendoorn[4], Sotiris Chatzis[5], Panos Paramithiotis[5]

[1]Hellenic Mediterranean University
Department of Electrical and Computer Engineering
Heraklion, Crete 71410, Greece
{karampidis@hmu.gr}
{mtp187@edu.hmu.gr}
{mchristof@hmu.gr}
{papadour@hmu.gr}

[2]University of Patras,
Patra, Greece
{dkosmo@upatras.gr}
{k.antzakas@upatras.gr}
{V.Lampropoulou@upatras.gr}

[3]Polytechnic Institute of Porto,
Porto, Portugal
{nfe@isep.ipp.pt}
{taqol@isep.ipp.pt}

[4]Royal Dutch Kentalis,
Netherlands
{B.Elsendoorn@kentalis.nl}

[5]Cyprus University of Tecnology,
Limassol, Cyprus
{sotirios.chatzis@cut.ac.cy}
{pparamithiotis@gmail.com}

Abstract: Despite substantial advancement over the past ten years, learning opportunities are still unevenly distributed and many people are omitted of the educational system. Deaf people need special educators and sign language experts. However, there is a lack to well-trained educators for deaf people. Computer Assisted Teaching in Sign Language (CAT-SL) was a three-year EU funded project that fulfills this gap and develops an innovative and affordable system for interactive SL teaching for students in Special Education/Pedagogical departments and primary school education. CAT-SL project developed a curricula and guides for teaching SL using the CAT-SL system for three multilingual courses, in partners countries - Greece, Cyprus, Portugal and Netherlands- to support the social inclusion of the deaf children. The CAT-SL system is based on computer-vision, machine-learning and linguistic technology developed by all the involved partners in several ongoing or recently completed national and EU-funded projects. The project can serve as a basis for future similar projects and can be easily extended to more international Sign Languages.