TASTI

Application-TAilored SynThetic Image generation

Labelled in Xecs Call 1, a EUREKA cluster

Xecs Project Number 2022-005

D7.2 – Xecs Project summary

Due date of deliverable: M3

Start date of project: 1 January 2023	**Duration:** 36 months
Organisation name of lead contractor for this deliverable:	Philips
Author(s):	Ernst Hermens
Status:	Final
Version number:	1.0
Submission Date:	31-05-2023
Doc reference:	TASTI_D7.2 Xecs Project summary
Work Pack./ Task:	WP7 – Task 7.1
Description: ***(max 5 lines)***	Project summary

Nature:	Report		
Dissemination Level:	**PU**	Public	**X**
	PP	Restricted to other programme participants	
	RE	Restricted to a group specified by the consortium	
	CO	Confidential, only for members of the consortium	

DOCUMENT INFO

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Documents history

Document version #	*Date*	*Change*
V1.0		Approved Version to be submitted to Xecs office

Document data

Keywords		Project summary
Editor Address data	Name: Partner: Address: e-mail:	Ernst Hermens Philips High Tech Campus 34 5656AE Eindhoven The Netherlands ernst.hermens@philips.com
Delivery date	31-05-2023	

Distribution list

Date	*Issue*	*Circulation*
31-05-2023	1.0	Sharepoint

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1. Xecs PAVIS Project summary

Synthetic images will play a big role in the development of smart cyber physical systems, such as medical equipment, cars, production facilities or agricultural machines, but is also a potential growth market for suppliers of computer hardware that generates the synthetic data. Each application for synthetic images has its own set of requirements.

Typical criteria include emulation of realism (noise, colours), latency (e.g., in a training simulator), richness of simulated scenarios, and energy consumption. Meeting these criteria requires a technical solution that starts with the hardware that generates images (typically sensors) and characterization thereof and ends with the implementation of novel algorithms on the right computing hardware. Being able to start from higher-order source models and images and transform them to synthetic images that fit their application with reusable technology would tremendously accelerate the development of image-driven applications. However, tools that are currently available for synthetic image generation are too generic or their capabilities are insufficient for most industrial purposes. At the same time, there are very specialized tools available, for example to generate specific MRI images, that cannot be repurposed to another application.

The main goal of TASTI is to develop a modular framework of transferable technology to innovate synthetic image generation and tailor it towards applications. The proposed framework is multidisciplinary and will feature a holistic view on (1) solutions for optical sensor systems and training simulators, (2) cloud/edge infrastructure considering processing hardware and acceleration techniques, and (3) software components and algorithms, including AI.

The framework will enable the use of the synthetic data generation technology at industrial scale, across four different applications. It will also unlock the use of the technology in many future applications. The technologies to be developed in the TASTI framework will be demonstrated in four different industrial domains (Healthcare, Automotive industry, Material production and Agriculture). It will enable the development of novel industrial AI and simulation applications and will accelerate the development of future applications.

This will bring a competitive advantage to companies like Philips, Otokar, Solvay and Mode40 that deploy such applications in their respective fields. The TASTI project brings together a competent synthetic data ecosystem (end-users, technology & research partners and system integrators) from five European countries and from Canada.