



Machine Interaction

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PhD candidate*

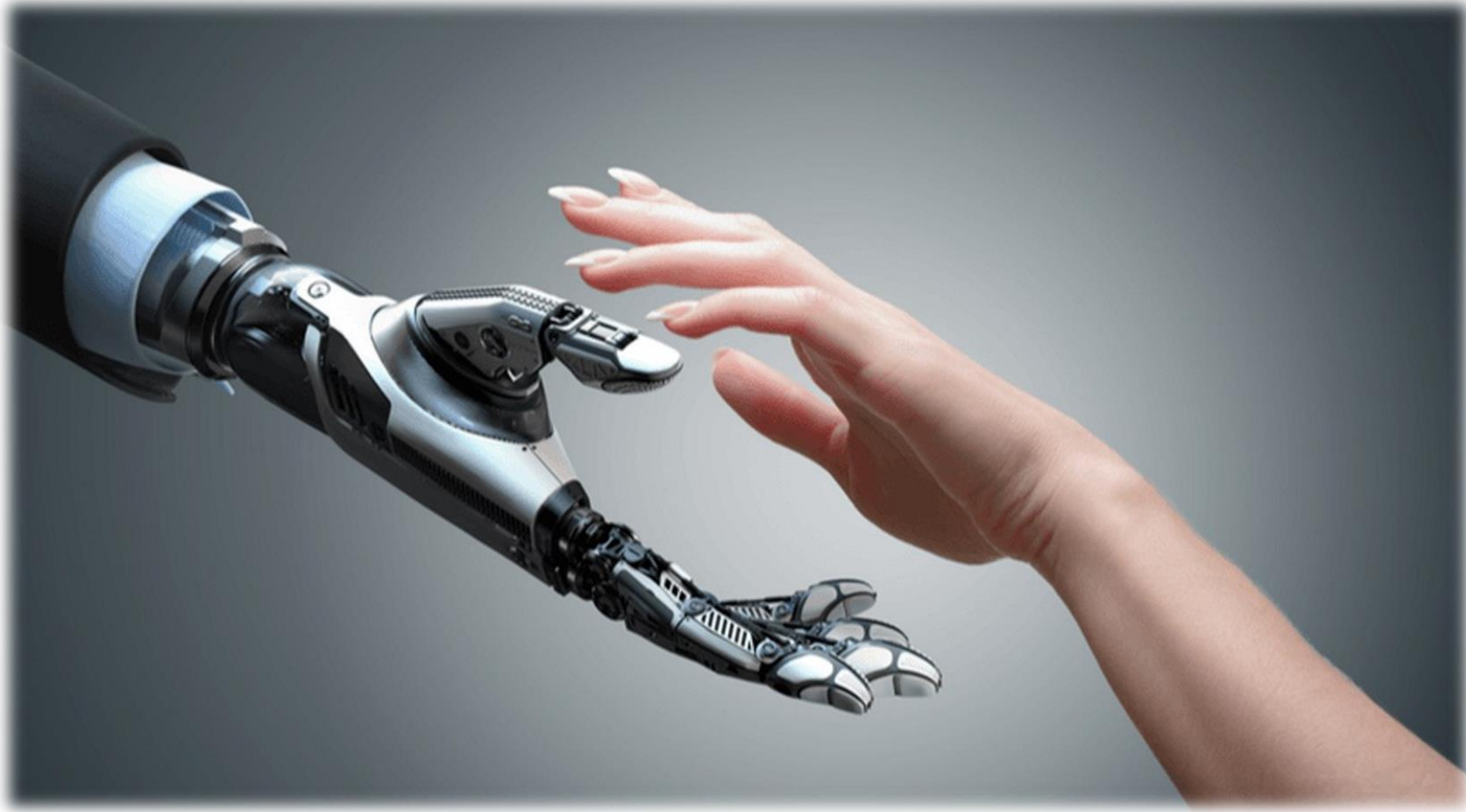
*Project: Intelligent Manufacturing Assistant Bot (IMAB)
Budget – 250 000 €*

4 years of experience in Oil and Gas in Kazakhstan

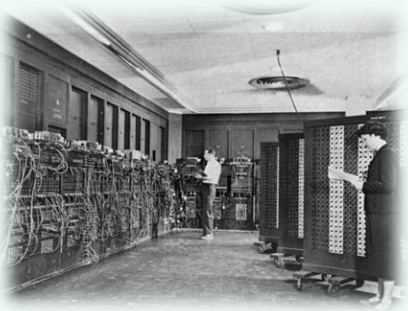
*Master in Engineering – Automation and Control
Bachelor of Science – Robotics and Automation*



What is Human-Machine Interaction?



Historical Evolution of HMI



First GUI

1965



Computer mouse

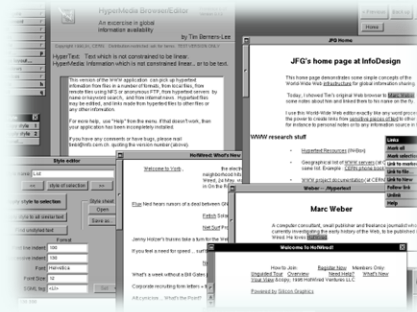
1973

Keyboard



1983

Web Browsers



1995



Touchscreens

2007

Voice commands



2010

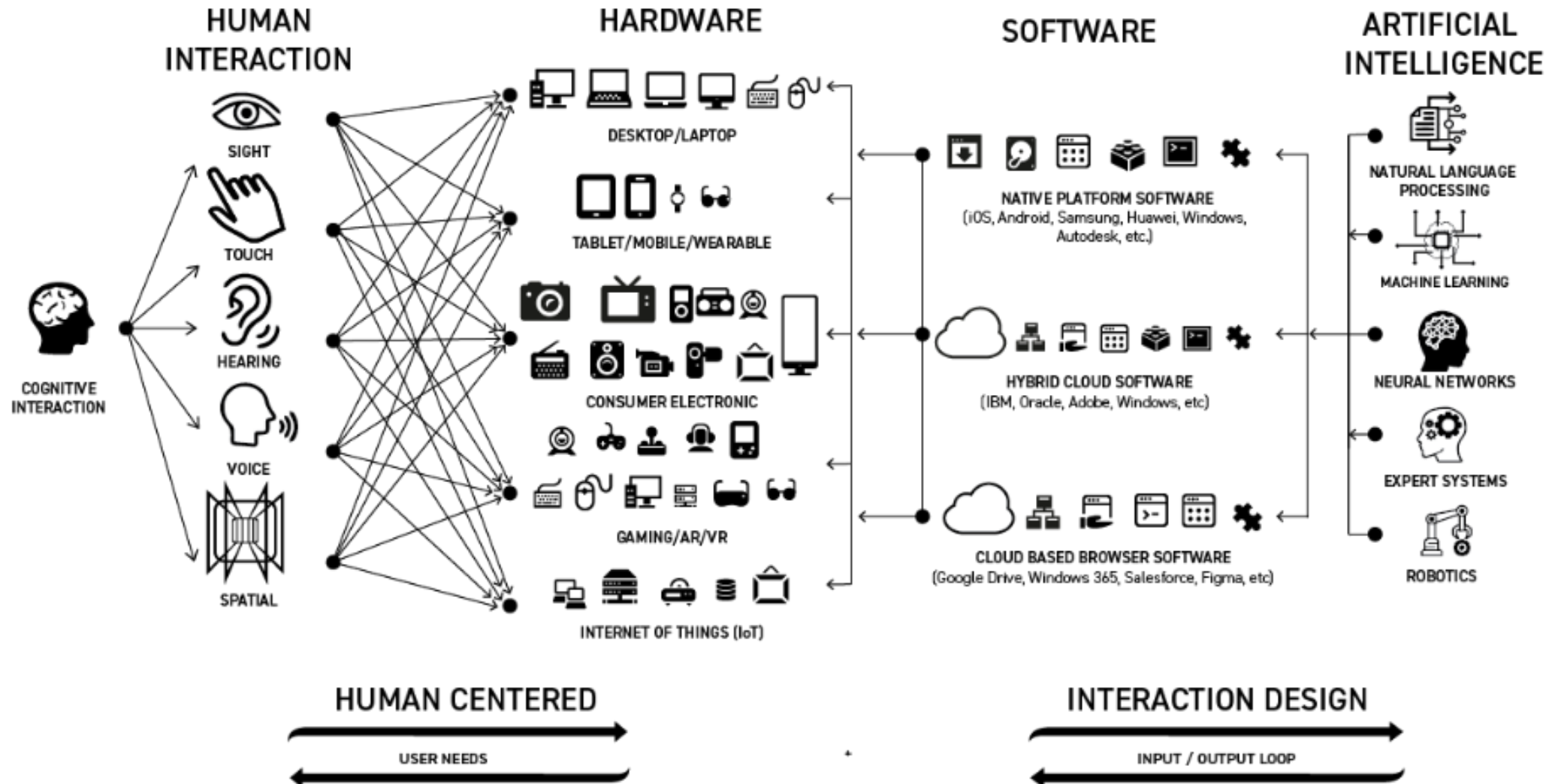


ChatGPT

AI Interaction

2020

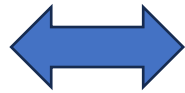
Interaction Design Paradigms



Machine communication



Machine



Program logic control (PLC)



- Modbus
- PROFIBUS
- PROFINET
- EtherNet/IP
- EtherCAT
- OPC UA
- MQTT
- HTTP/HTTPS

Industrial Protocols



Software

Git Repository

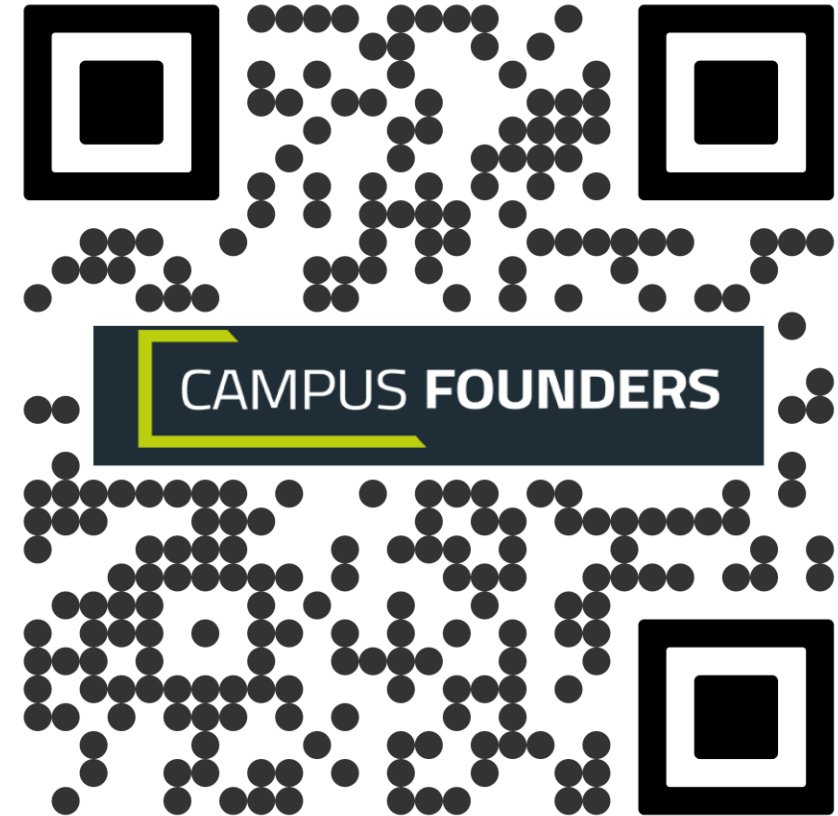
https://github.com/azhaksylyk/campus_founders

1. *Download Repository*
2. *Open folder in VS Code*
3. *Create virtual environment:*

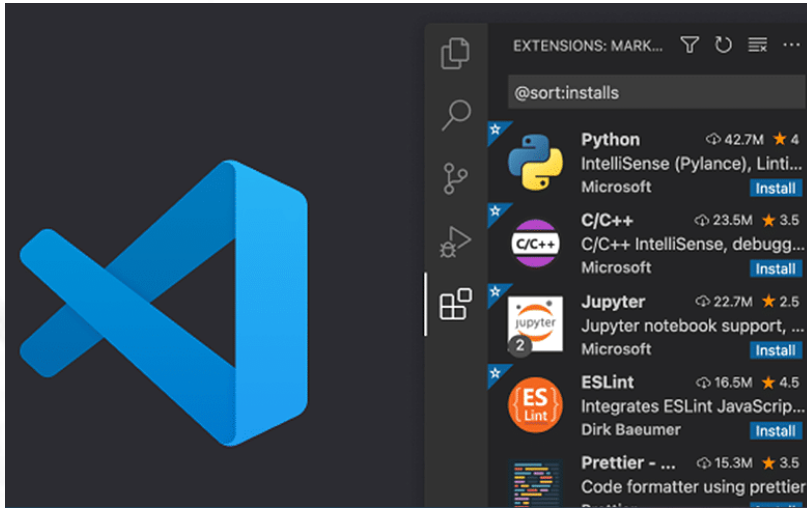
```
python -m venv venv
```

4. *Install libraries:*

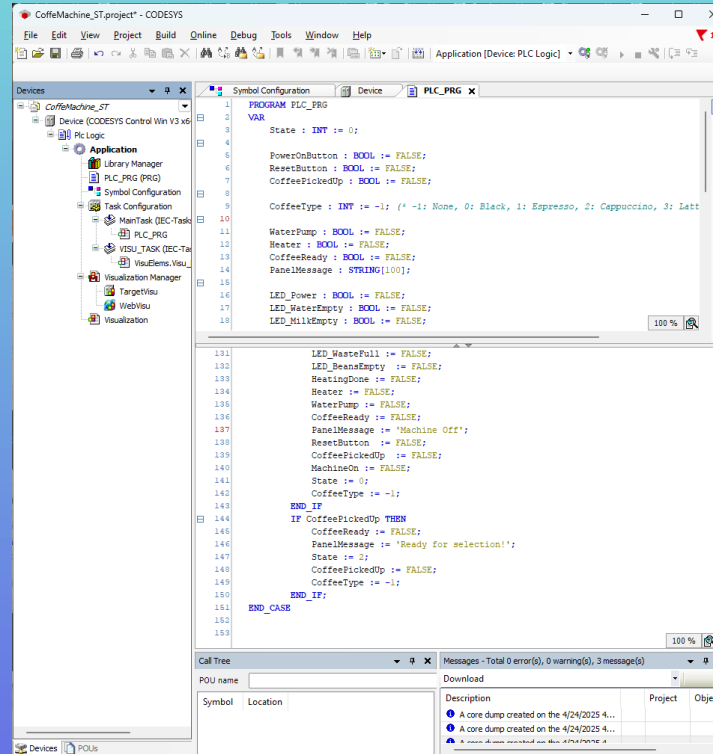
```
pip install -r requirements.txt
```



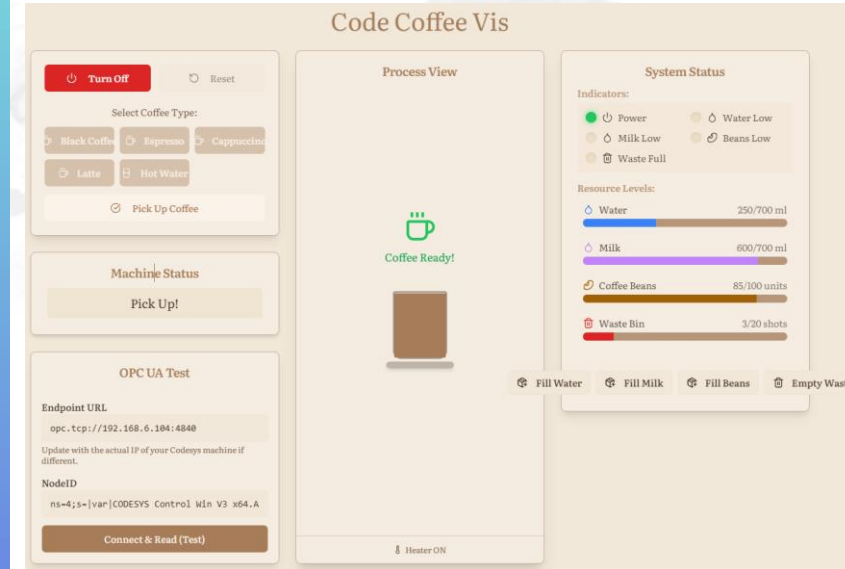
VS Code



Codesys



Visualization



- *Speech recognition:*
Language Model (LLM) – Gemini API
- *asyncio library — Asynchronous I/O*



THANK YOU!

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GitHub: azhaksylyk