

Silicon Perception

Seed Round

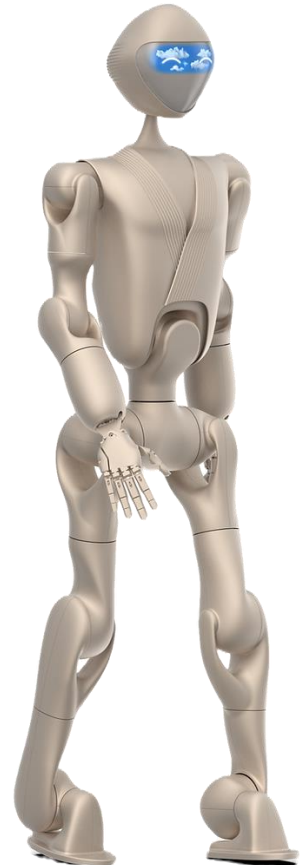
Oct 2024

Company Mission

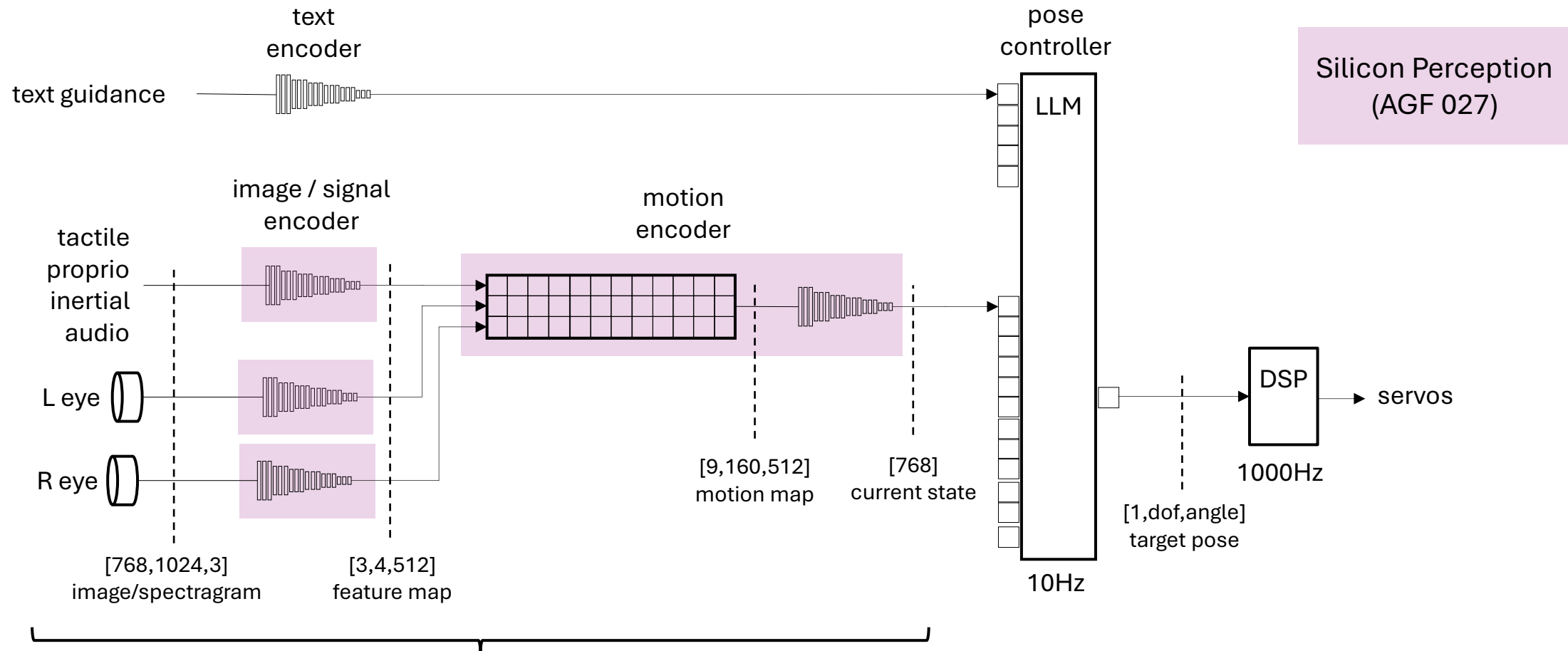
Deliver industry leading silicon for autonomous humanoid robots

In 2-5 years :

- Robots will be controlled by differentiable models
- Low latency perception will enable agile hand-eye coordination
- Single chip foundation models will become a new silicon category



























Reference Architecture



Real time perception

<10ms constant latency, 1024x768 pixels, 200 frames/s

Target Market

 Boston Dynamics	 Agility Robotics	 Figure AI
 ABB Ltd	 Engineered Arts	 PAL Robotics
 Tesla	 Vecna Robotics	 Anduril Industries
 Apptроник	 Hanson Robotics	 UBTECH Robotics
 iRobot	 Beyond Imagination	 FANUC
 Halodi Robotics	 Macco Tecnologia Para el...	 Piaggio Fast Forward Inc.
 Anvil Labs	 American Robotics	 Kinova robotics
 Agibot	 Bristol Robotics Laborato...	 DENSO Robotics

Applications

- Data collection
- Teleoperation
- Autonomous robots

Total Available Market

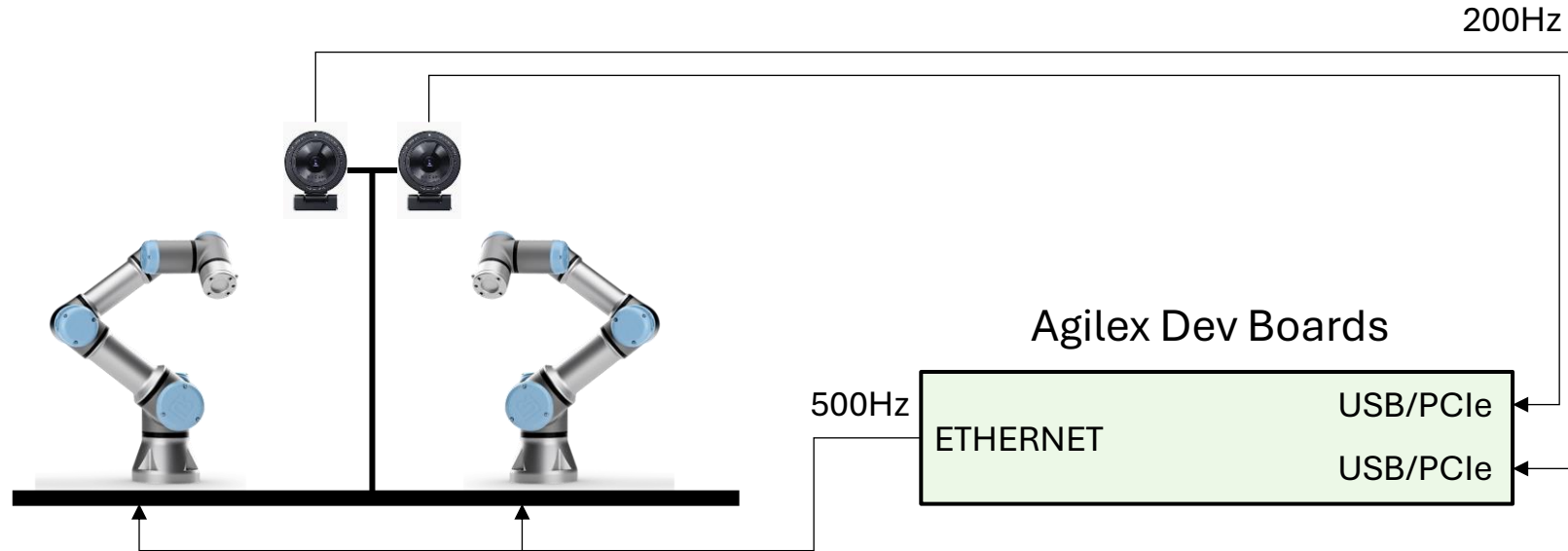
- 10M robots/year
- 4 SP devices/robot

Related References

Paper/Website	Year	Significance
Stanford HumanPlus	2024	Human imitation learning PoC
DeepMind Table Tennis	2023	Defines high speed, low latency requirements
DynaMo	2024	Self-supervised pretraining for robot models
Facebook Sapiens	2024	Frontier image encoder for knowledge distillation
www.siliconperception.com	2024	Custom silicon for humanoid robots

Reference Design Proposal

Hardware

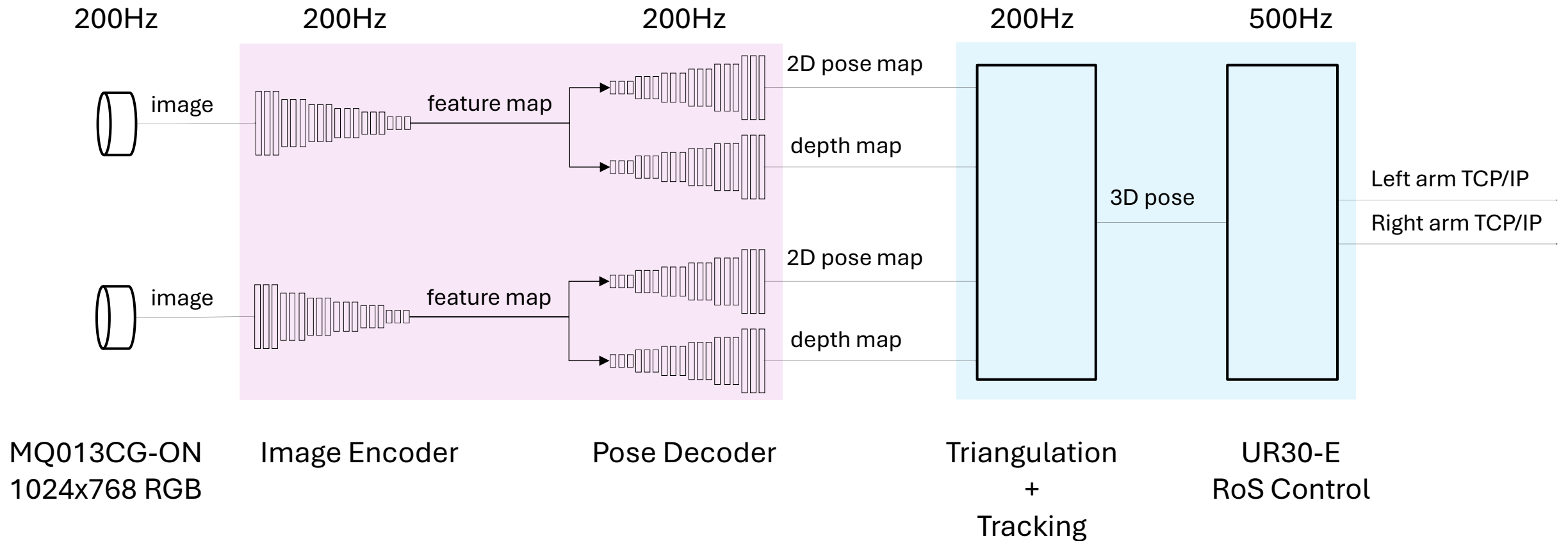


- Low latency human shadowing demo
- Two UR30 6-DoF arms with binocular Ximea MQ013CG-ON cameras
- **Roadmap: hands/grippers, VR+active vision, full humanoid, autonomous**

Architecture

Agilex SoC

Agilex Fabric



Execution Plan

Demo lab workspace		TBD
Equipment budget, \$300K capex assets		TBD
Image encoder pretraining	0w	Silicon Perception
Demo dataset image capture, synchronous binocular at 200 frames/s	3w	Silicon Perception
Demo dataset pseudo-label generation using Sapiens 0.3B model	3w	Silicon Perception
End-to-end training using images and pseudo-labels	3w	Silicon Perception
Image encoder top level RTL/DV, Quartus bitstream generation	8w	Silicon Perception
Pose/depth decoder top level RTL/DV, Quartus bitstream generation	4w	Silicon Perception
Triangulation/tracking algorithm and software, 200 frames/s, Agilex SoC	4w	Silicon Perception
UR-30E system software and safety using RoS, Agilex SoC	4w	Silicon Perception
Testing and refinement	12w	Silicon Perception

Budget

Equipment Item	Quantity	Cost
UR30 6-DoF arm	2@\$60K	\$120K
MQ013CG-ON camera	6@\$3K	\$20K
Agilex AGF-027 dev board	6@\$10K	\$60K
Xeon server + A100 GPU	4@\$25K	\$100K

