Fish and fish robots: how can they help to understand each other?

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Tallinna Tehnikaülikool

Biomimetics - a two way street
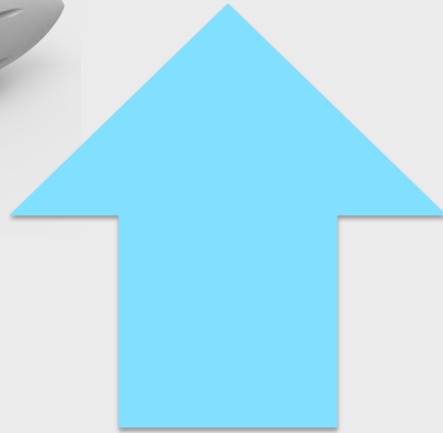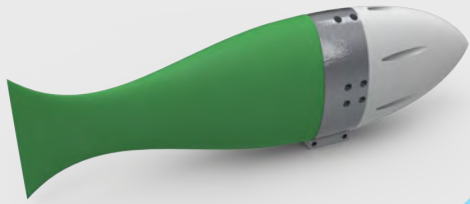
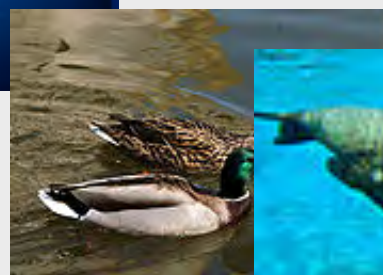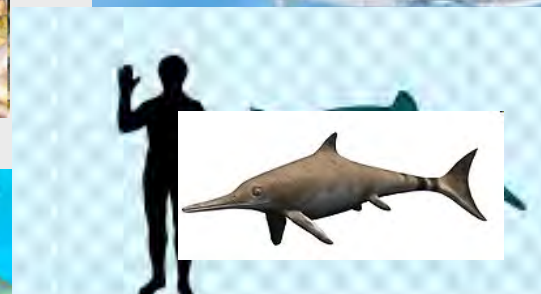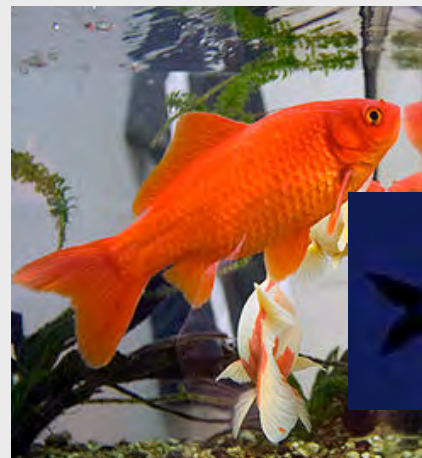New kinds
of machines

Tools for
biologists

Locomotion in water

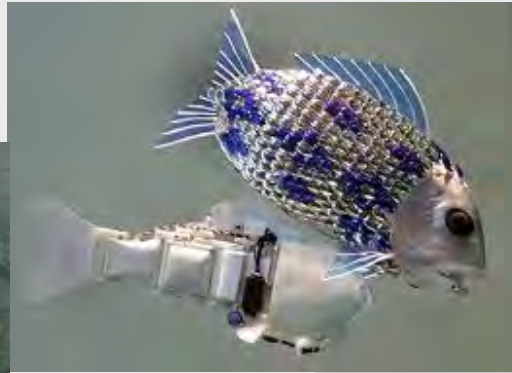# Replicated by robots

University of Essex
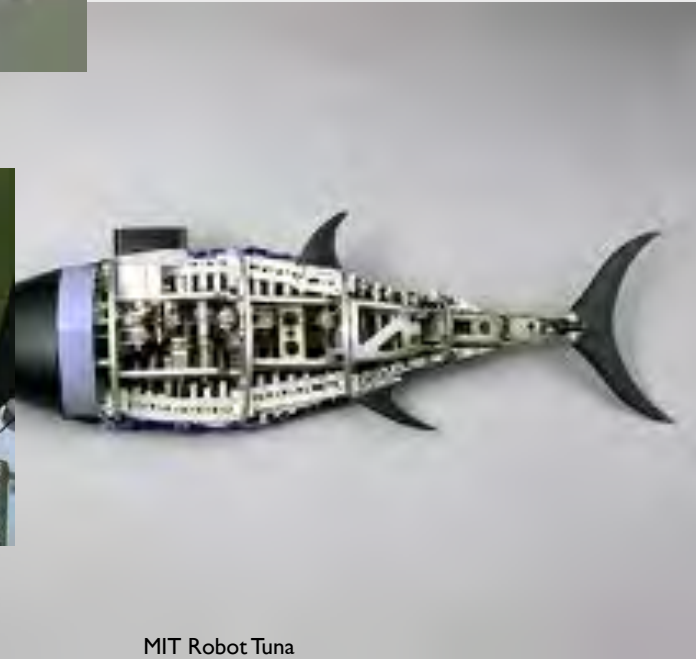
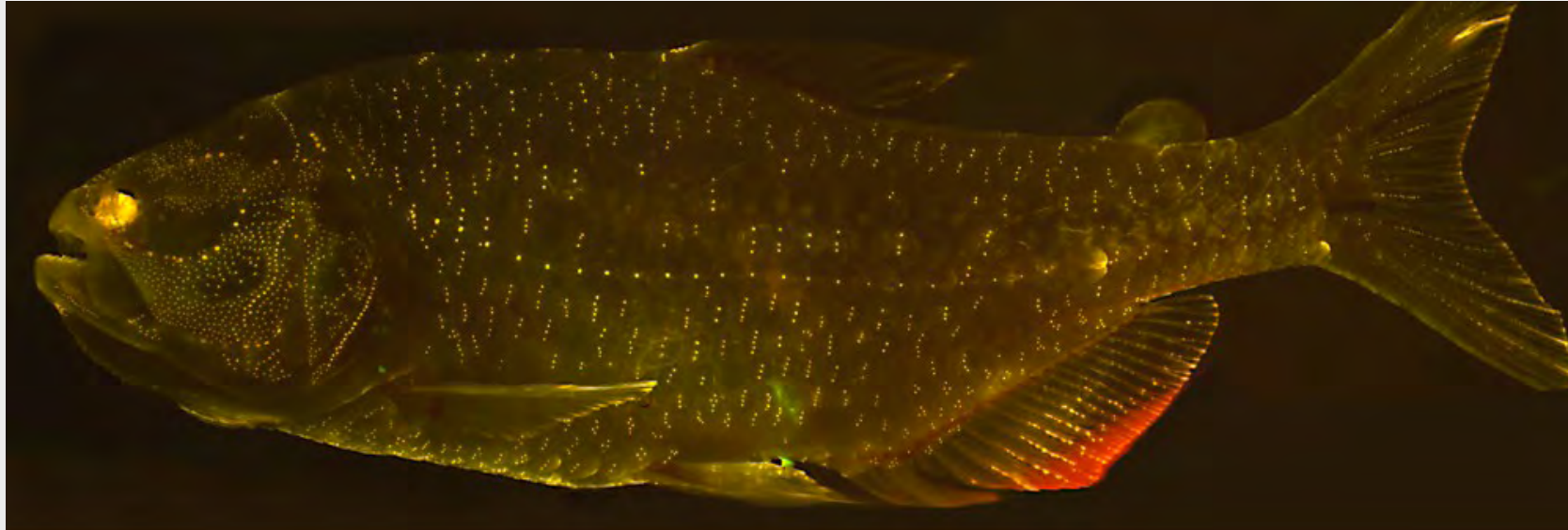Ryomei Engineering, Koi carp robot

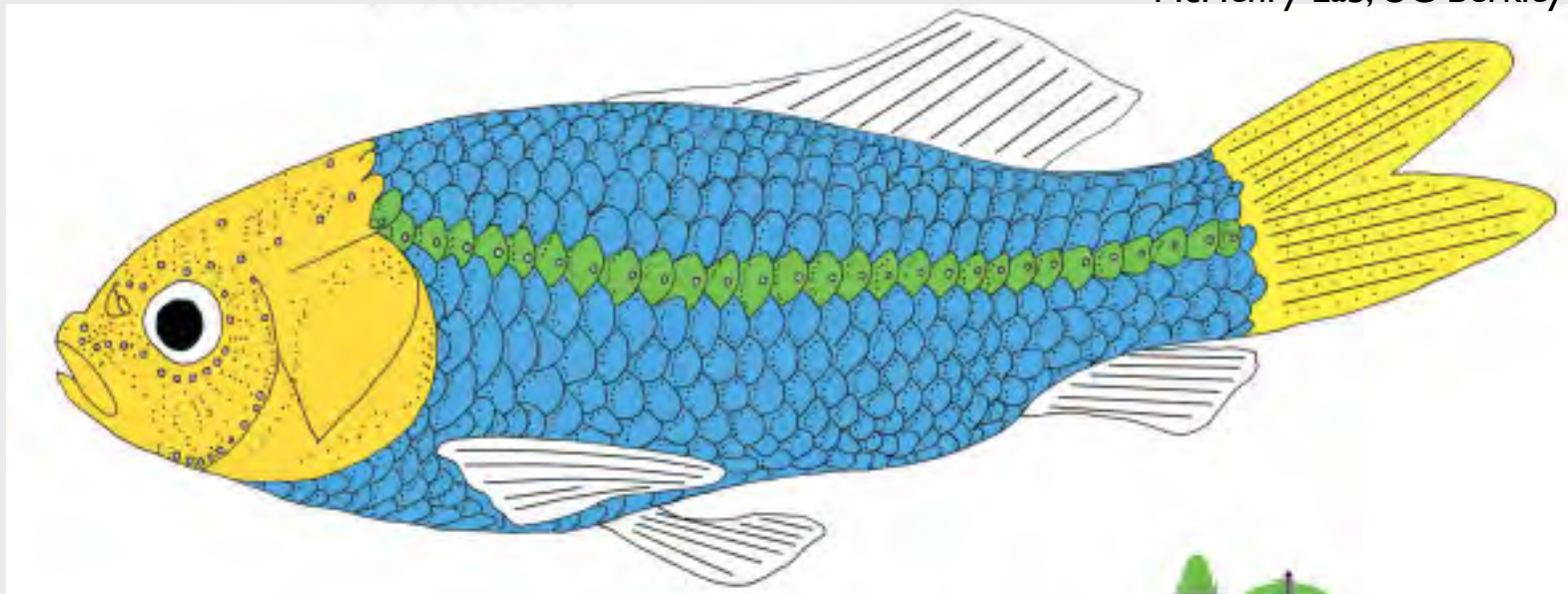Ghost swimmer Boston Engineering

MIT Robot Tuna

Festo Aqua ray

What we have overlooked? Sensing!

McHenry Lab, UC Berkley
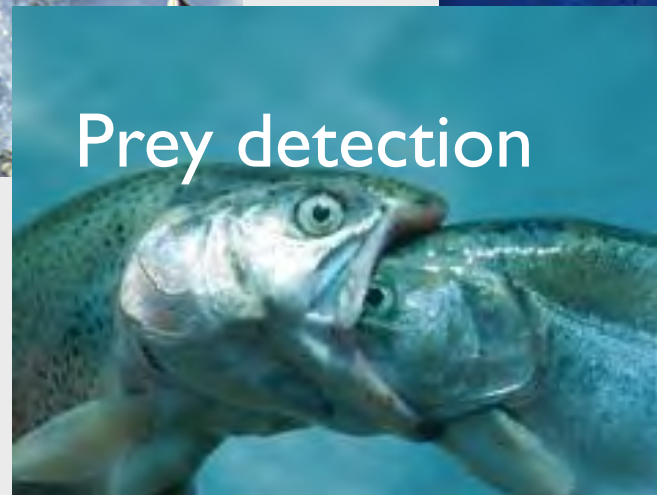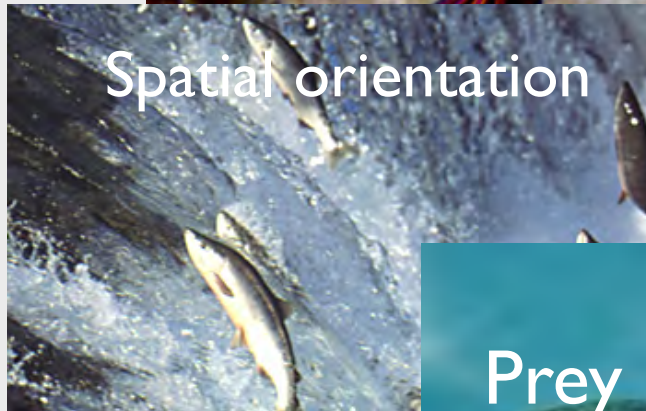
Medium is the message

Intraspecific Communication

Predator avoidance

Spatial orientation

Prey detection
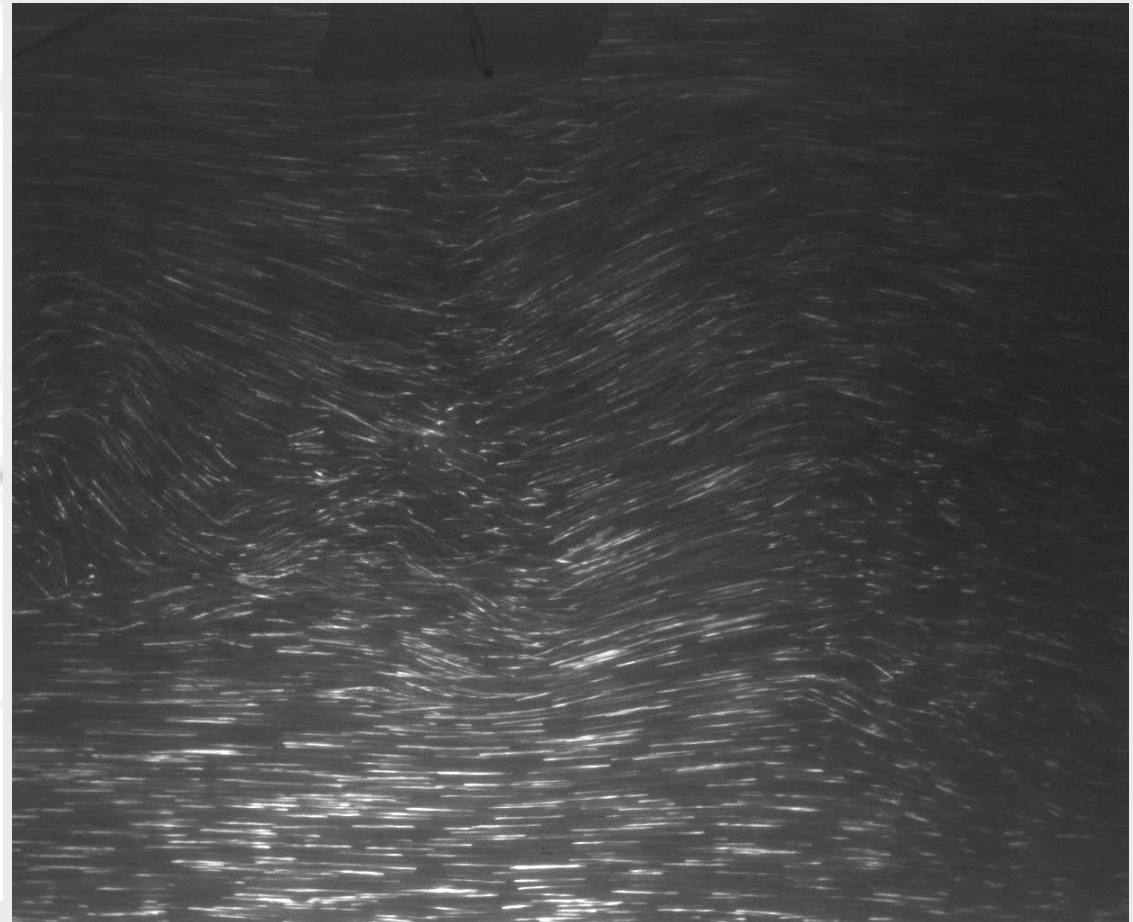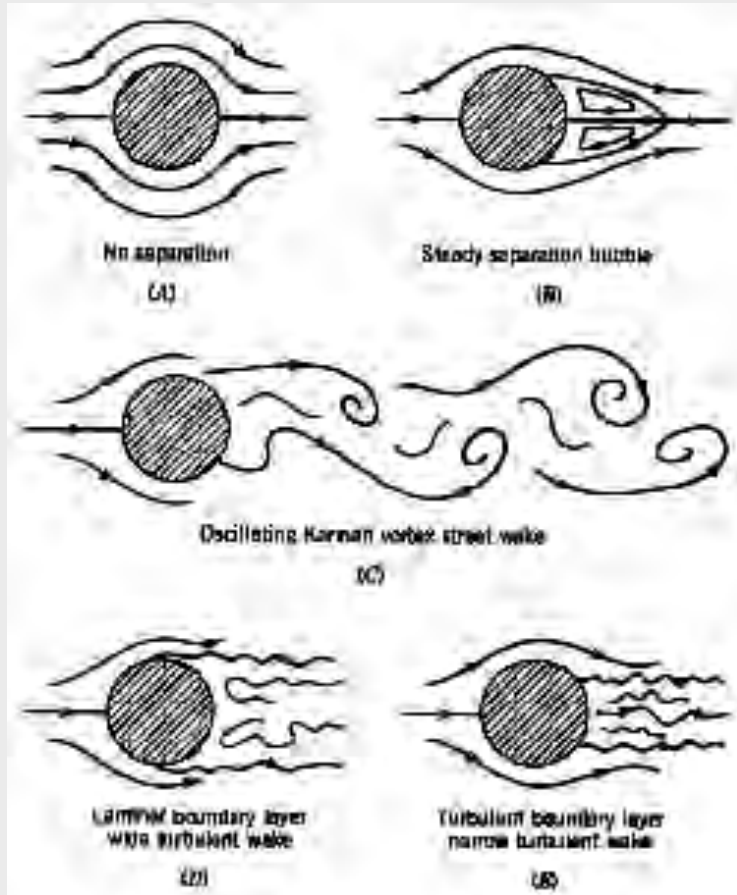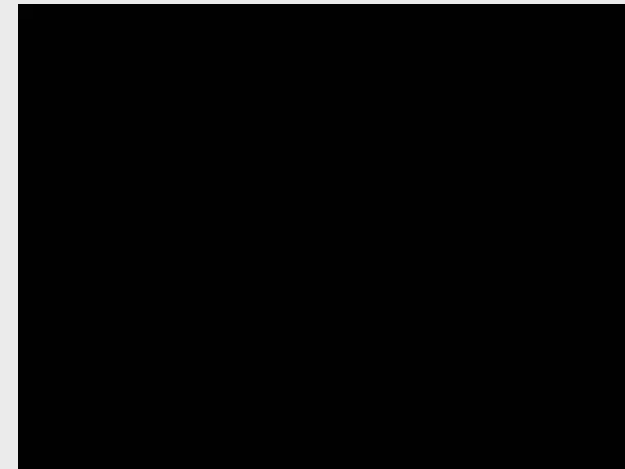
Schooling behaviour

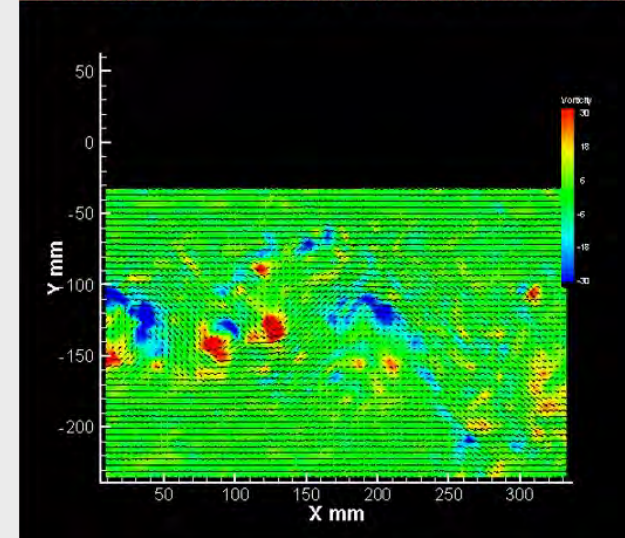www.biorobotics.ttu.ee

How to make sense of the flow?

Making sense of turbulence

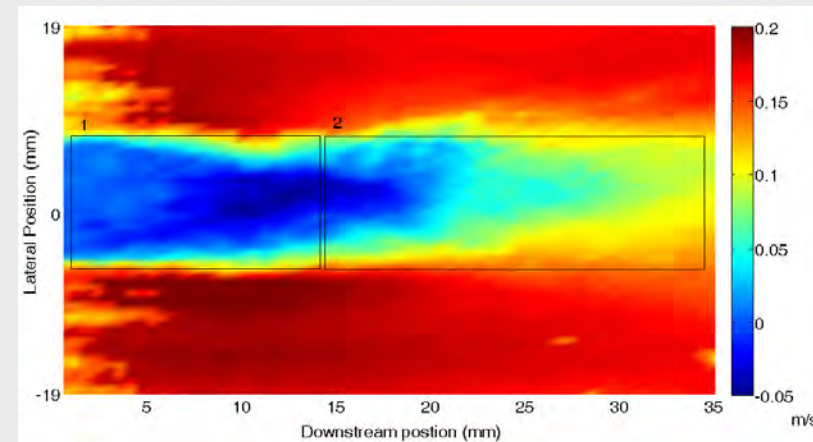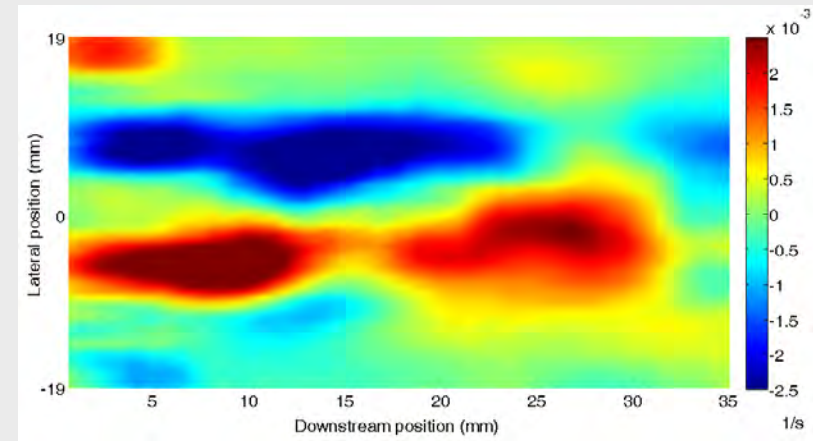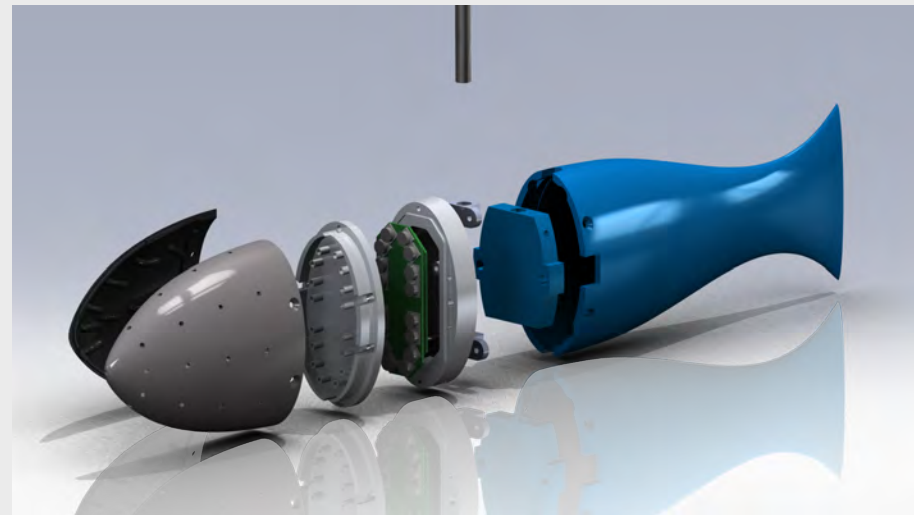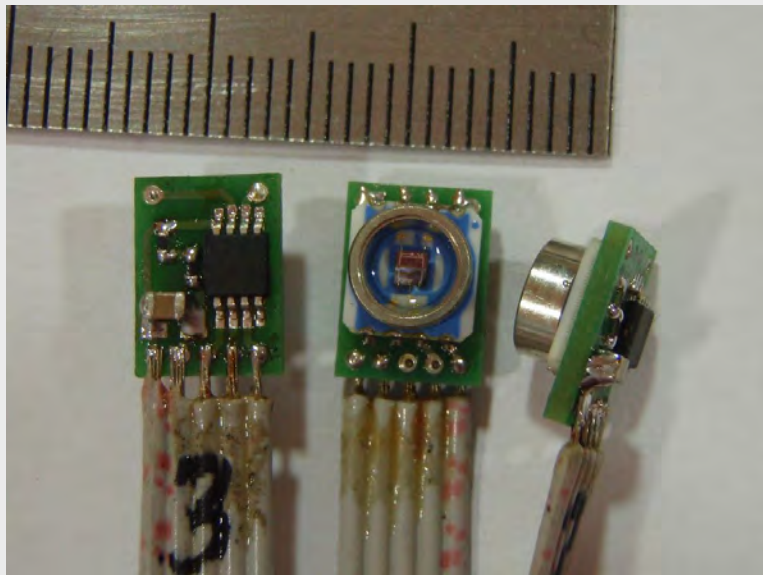# Creating and controlling turbulence

Periodic turbulence – fairly simple but relevant
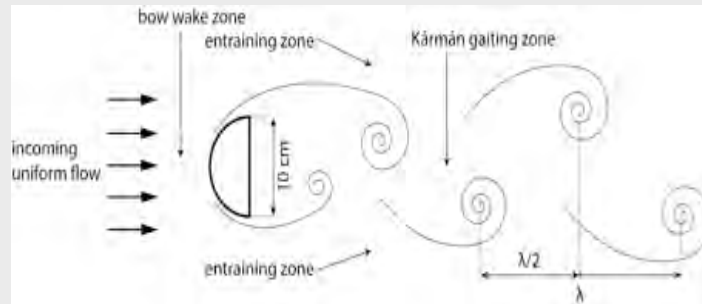
New sense for robots

Flow refuging
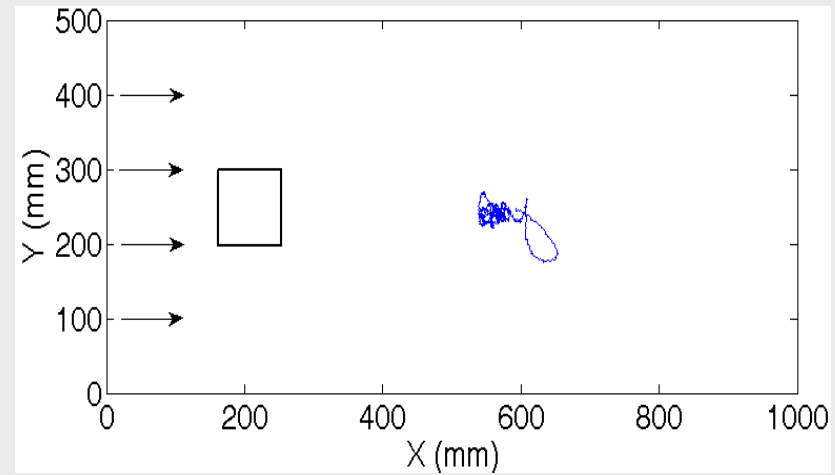
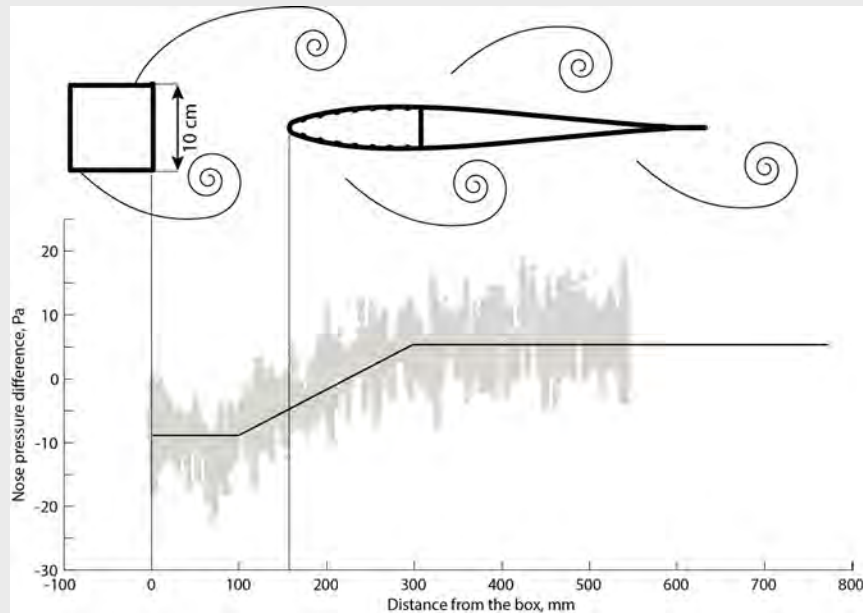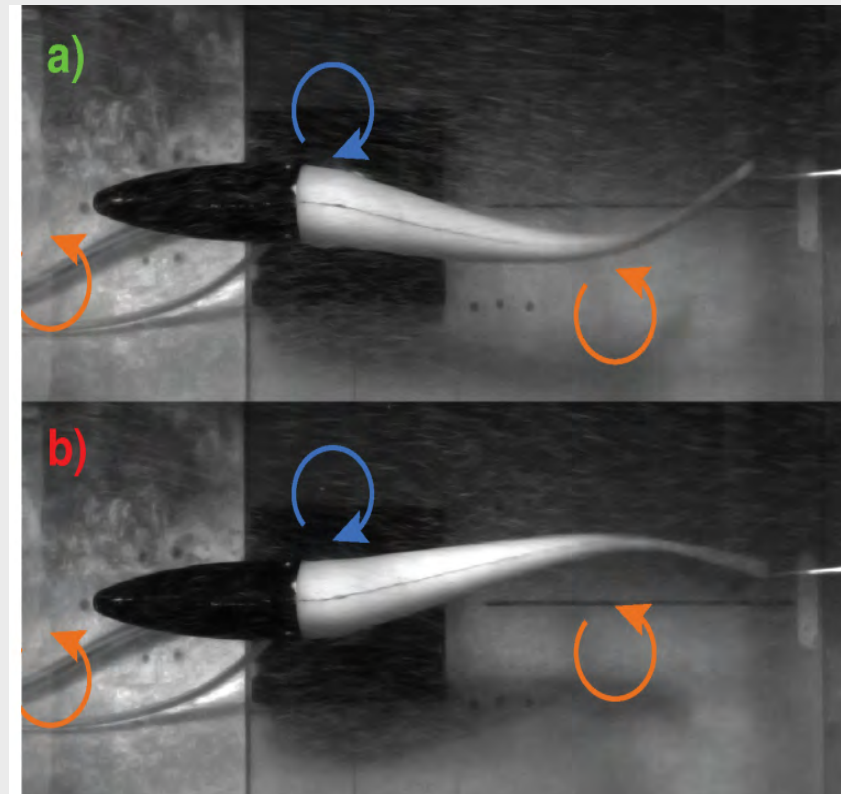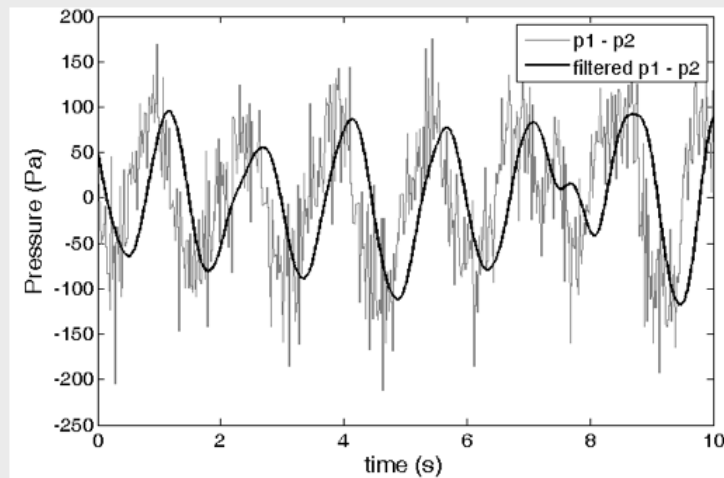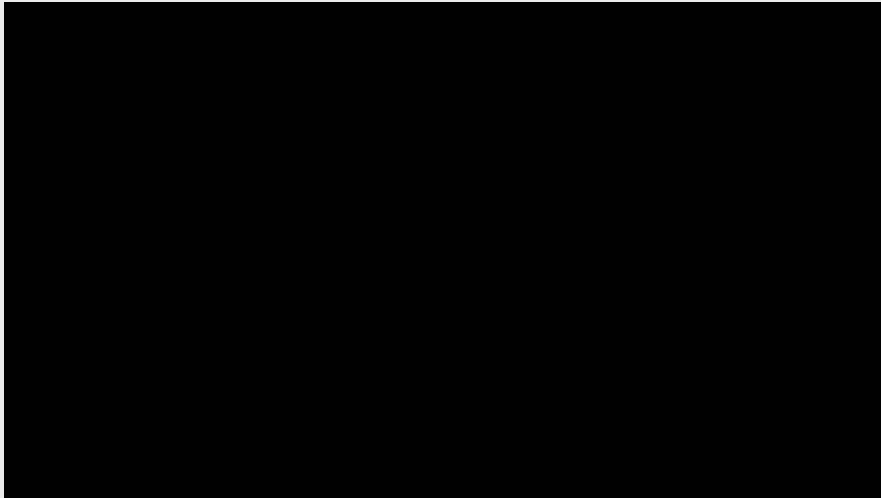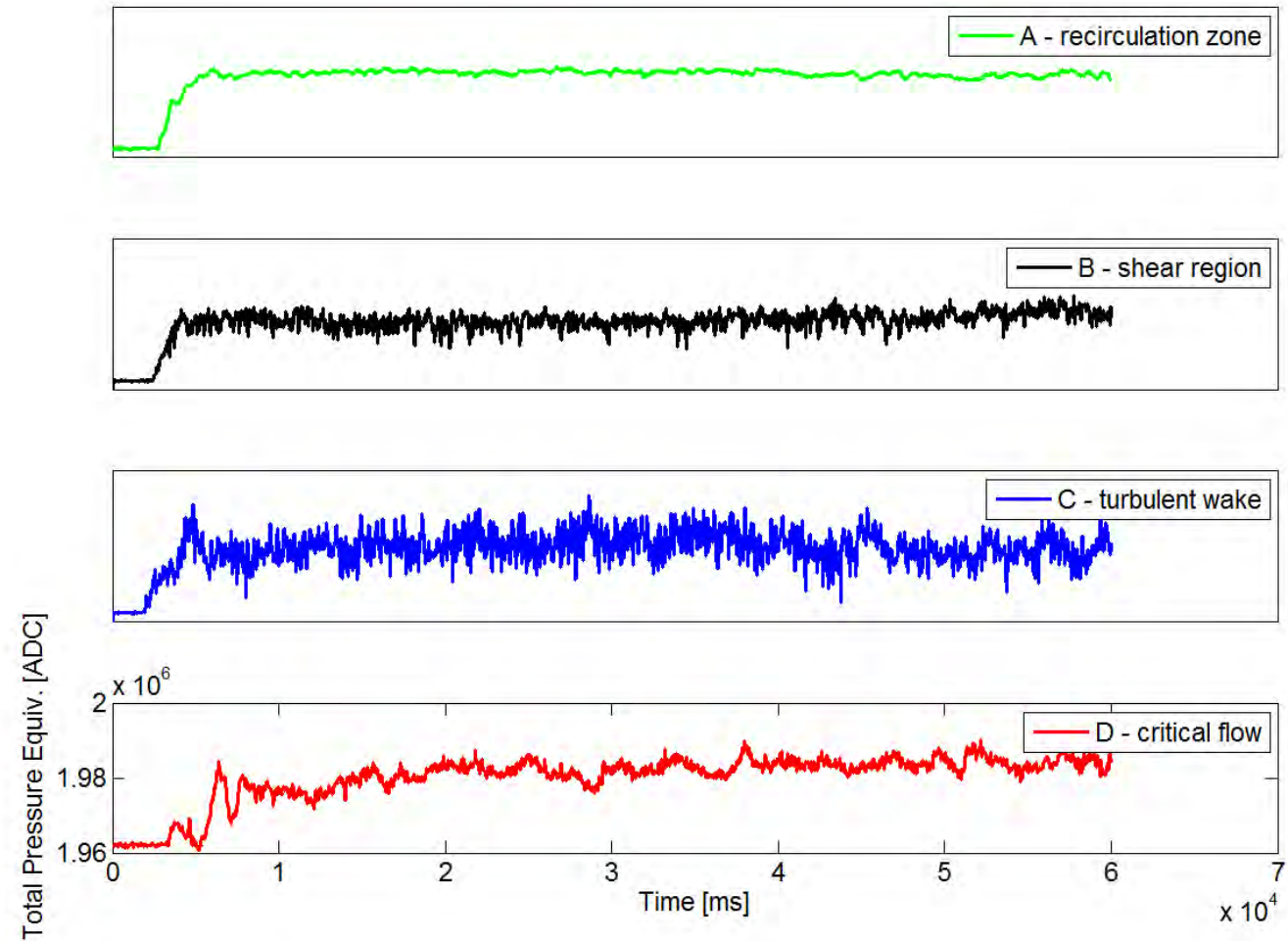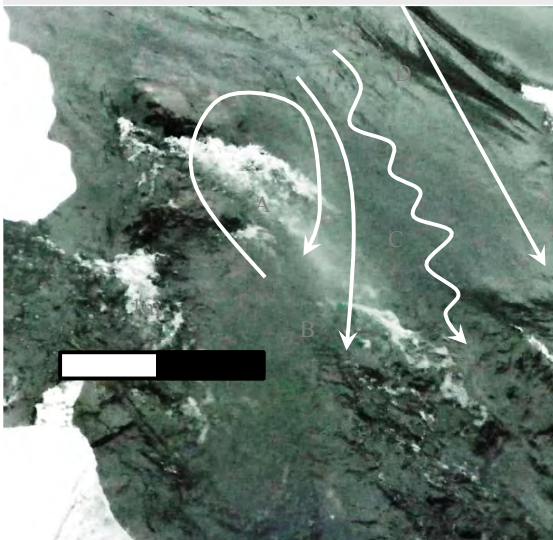T. Salumäe, M. Kruusmaa, "Flow-relative control of an underwater robot", in Proc. of the Royal Society", to appear

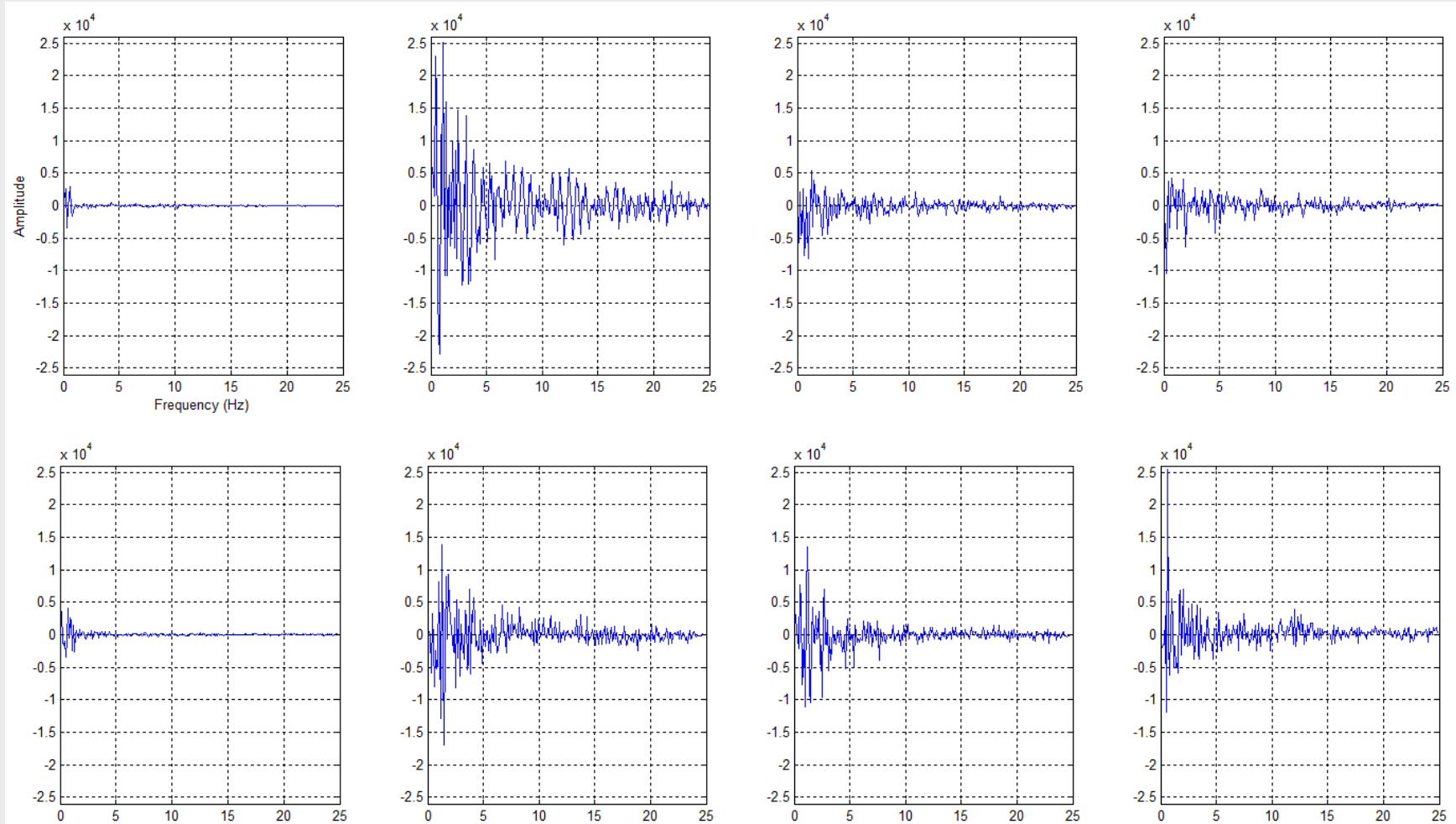# Sensing and interacting with vortices
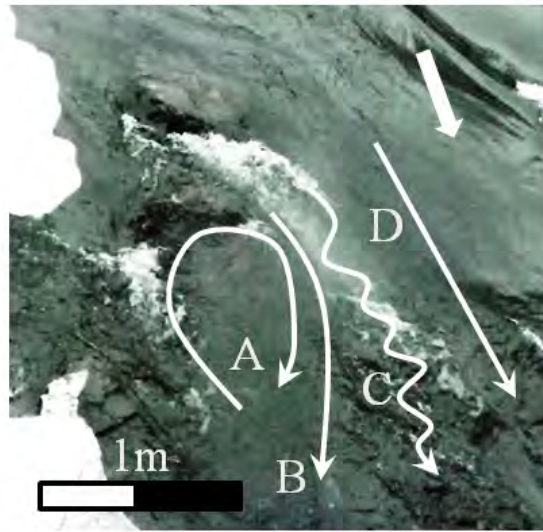
Building flowscapes

Some number crunching – analysis in frequency domain - actually quite simple to be honest

You can step in the same river twice

How fish pass fishpasses? Or why they don't?

Again, reducing complexity - semi-natural environment

Natural environment

U-CAT – turtle robot