# Robust Registration to a template brain for the Drosophila larva

Learning based approach – Voxelmorph
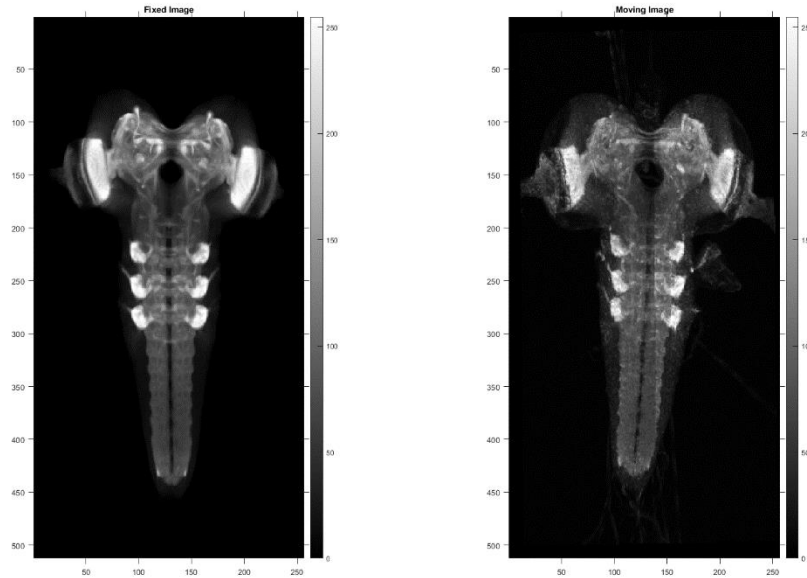
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Registration Setup

- – Full-scale version:
  - ▪ 993 x 1449 x 99 (w x h x d).
- – Downsampled version:
  - ▪ 256 x 512 x 64 (w x h x d).

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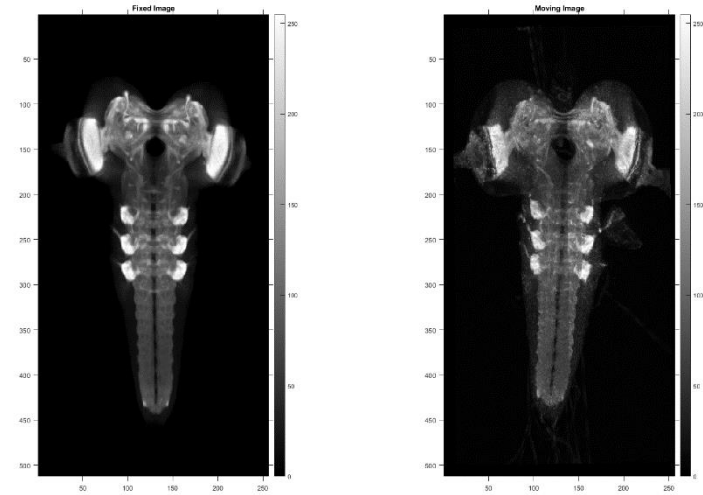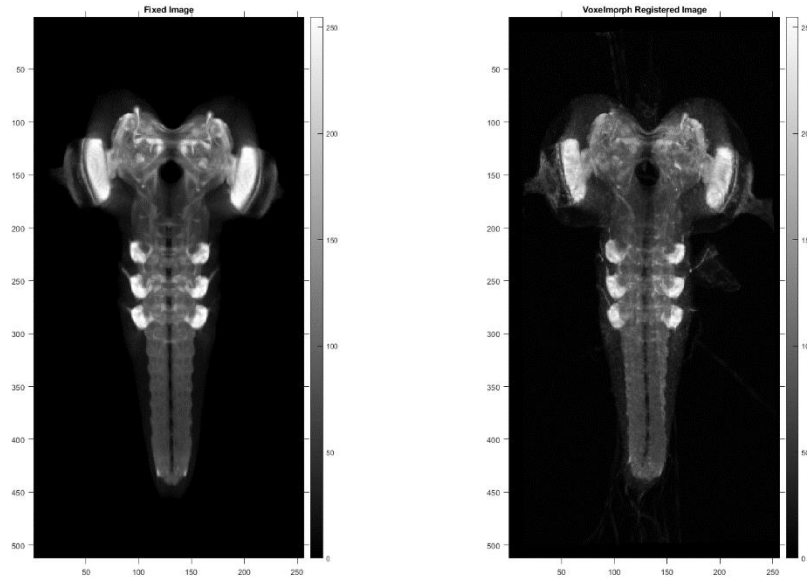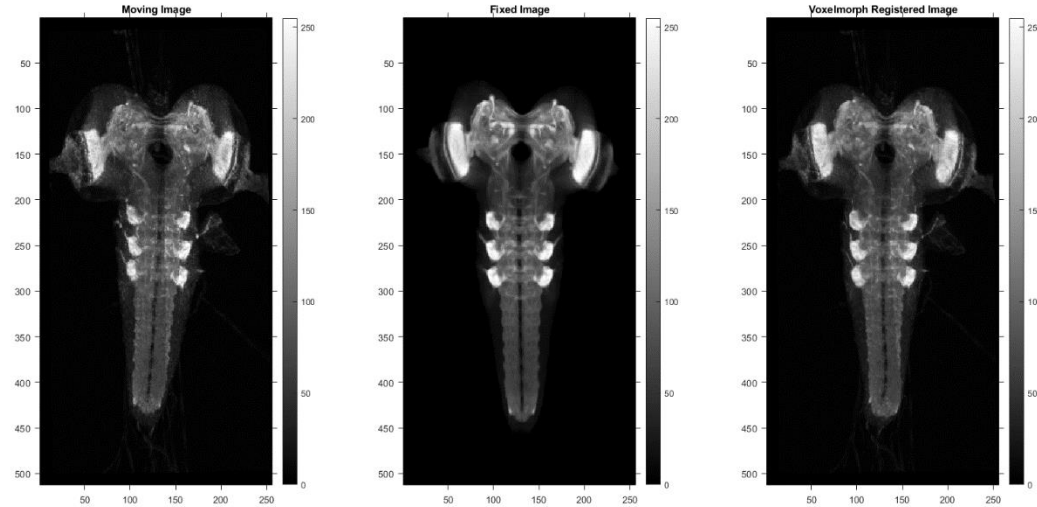
Registration result with Voxelmorph (1/3)

„Fixed" image (atlas/template/target) on the left hand side and „moving" image (subject) on the right hand side.

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Registration result with Voxelmorph (2/3)

„Fixed" image (atlas/template/target) on the left hand side and „registered" image (moved) on the right hand side.

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Registration result with Voxelmorph (3/3)

„Moving" image on the left hand side, „fixed" image at the center, and „moved" image on the right hand side. „Voxelmorph"

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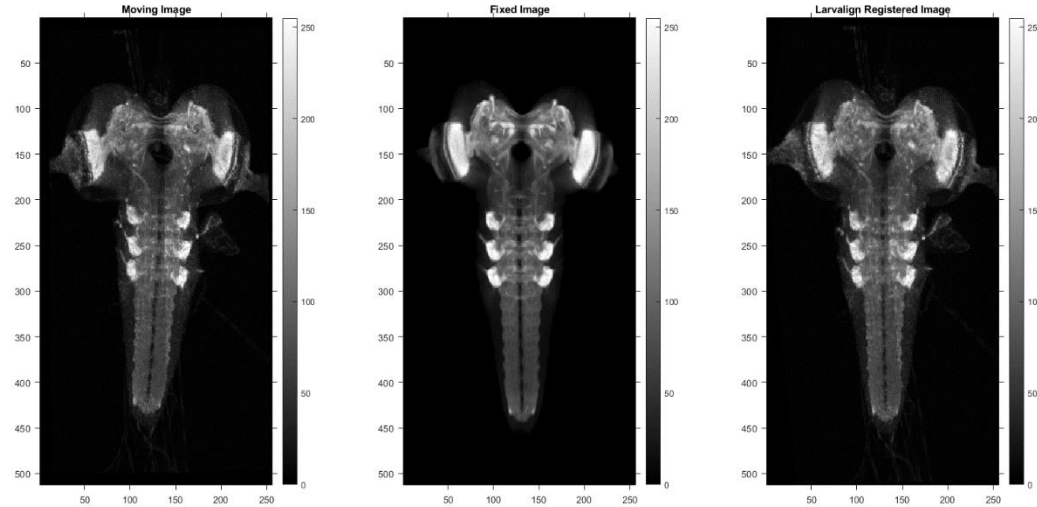
Registration result with Larvalign

„Moving" image on the left hand side, „fixed" image at the center, and „moved" image on the right hand side.
„Larvalign"

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Comparison between Larvalign and Voxelmorph

Time for registration

- CPU Configuration:
  - AMD Ryzen 9 5950X 16-Core Processor, 4.00 GHz.
  - 128 GB RAM
- GPU Configuration:
  - NVIDIA RTX A5000
  - 24 GB Dedicated GPU memory.
- Registration settings:
  - Single channel registration (NP Channel).
  - Downsampled version: 256 x 512 x 64 (w x h x d).
  - Full-scale version: 993 x 1449 x 99 (w x h x d).

	CPU	GPU
Larvalign	31,83s	35,12s
Voxelmorph	12,91s	14,63s

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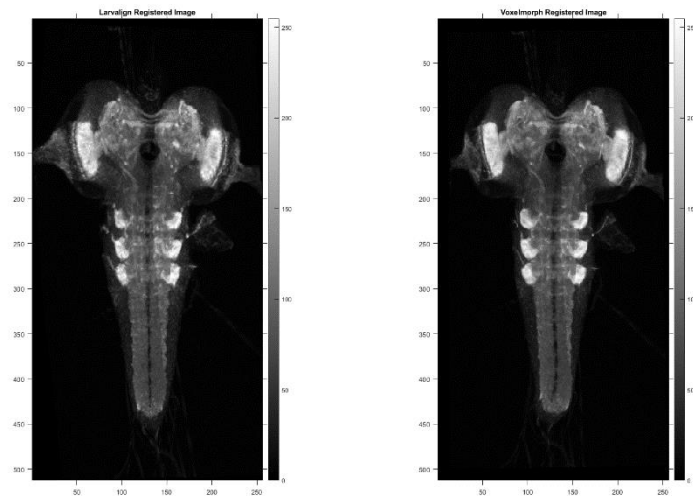
Vielen Dank
für Ihre Aufmerksamkeit