



A bee in the corridor: regulating the optic flow on one side

Franck Ruffier, Julien Serres, Guillaume P. Masson, Nicolas Franceschini

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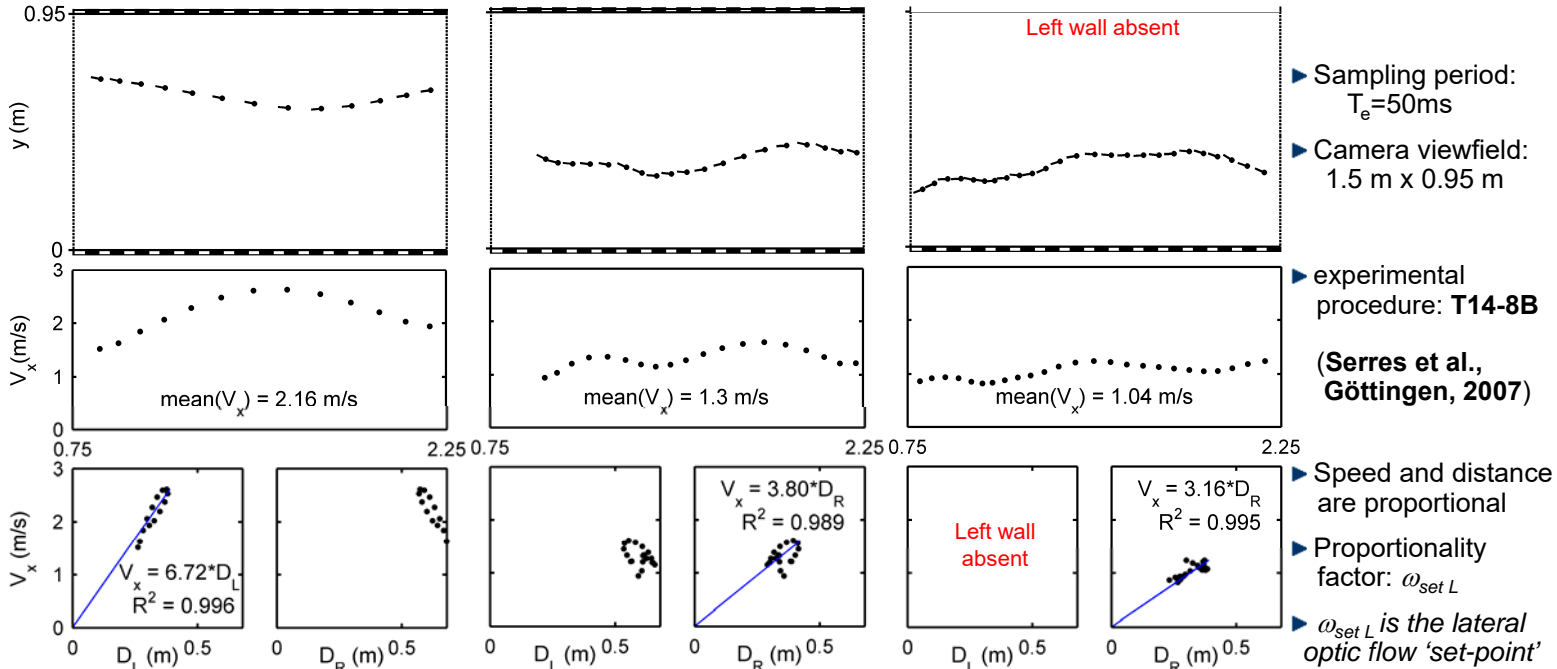
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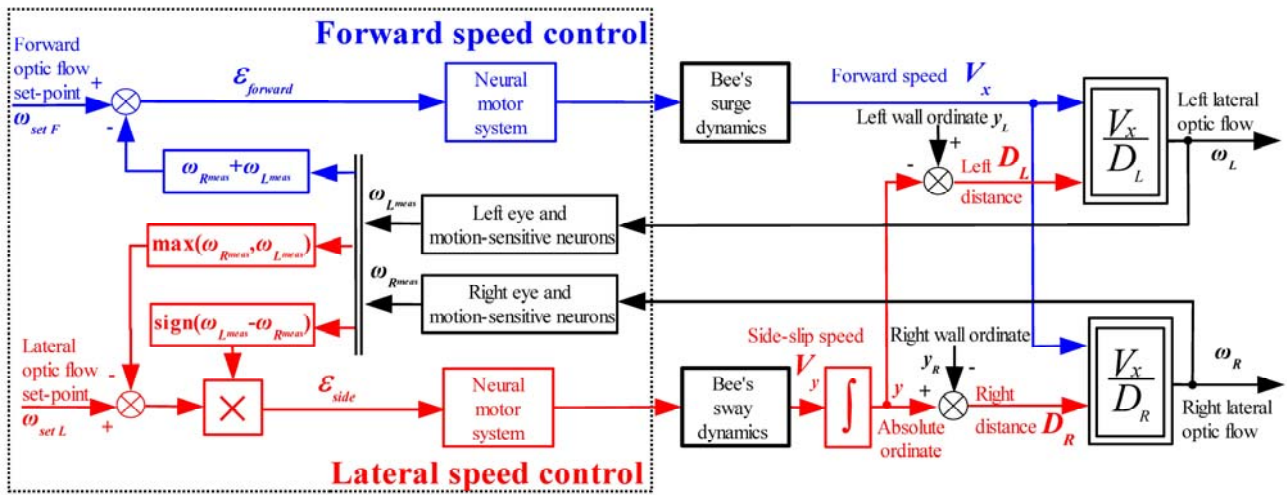
F. Ruffier, J. Serres, G.P. Masson and N. Franceschini

Biorobotics Dpt., Movement and Perception Inst., CNRS/Univ. of the Mediterranean,
163, avenue Luminy, 13288 Marseille Cedex 09 FRANCE e-mail: franck.ruffier@univmed.fr

• Frame by frame analysis of the trajectories of individual bees (*Apis Mellifera*)

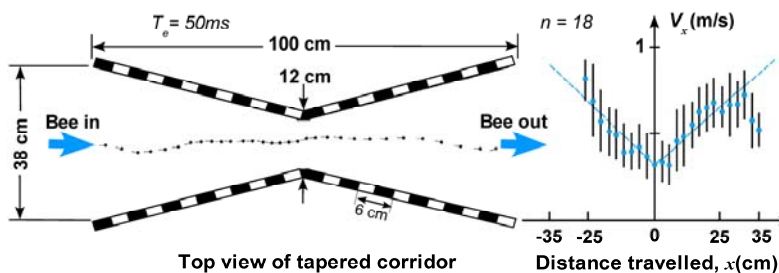


• The dual optic flow regulator for speed control and collision avoidance



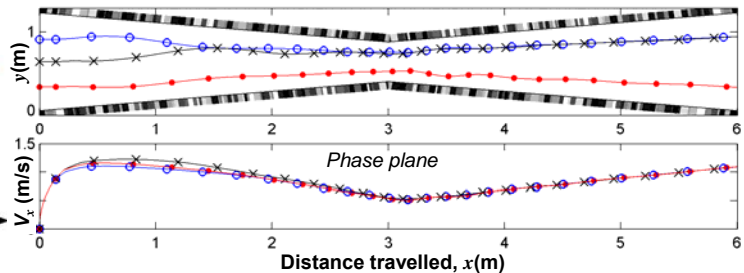
• Actual flight of a bee:

(adapted from Srinivasan, Zhang, Lehrer, Collett, 1996)



• Simulations of a fully actuated hovercraft:

(Serres, Ruffier, Franceschini, Proc. IEEE Biorob, 2006)



• Conclusion

- ▶ Forward speed and distance to one wall are **proportional** to each other, attesting that the lateral optic flow is held constant.
- ▶ The bee's behaviour is well accounted for by a **lateral optic flow regulator** (Serres et al., Proc. IEEE/RAS Biorob 2006)
- ▶ The **dual optic flow regulator** generates behaviours that are similar to those observed in bees (Srinivasan et al., 1996)