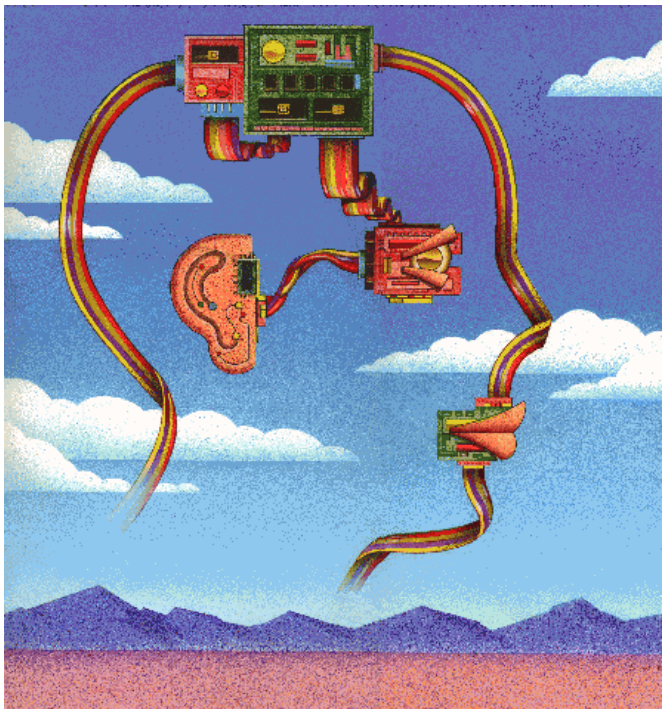


# Make a Chip that Sees

a.k.a. Introduction to VLSI Systems

Andreas G. Andreou
Pedro Julian

Electrical and Computer Engineering
Johns Hopkins University

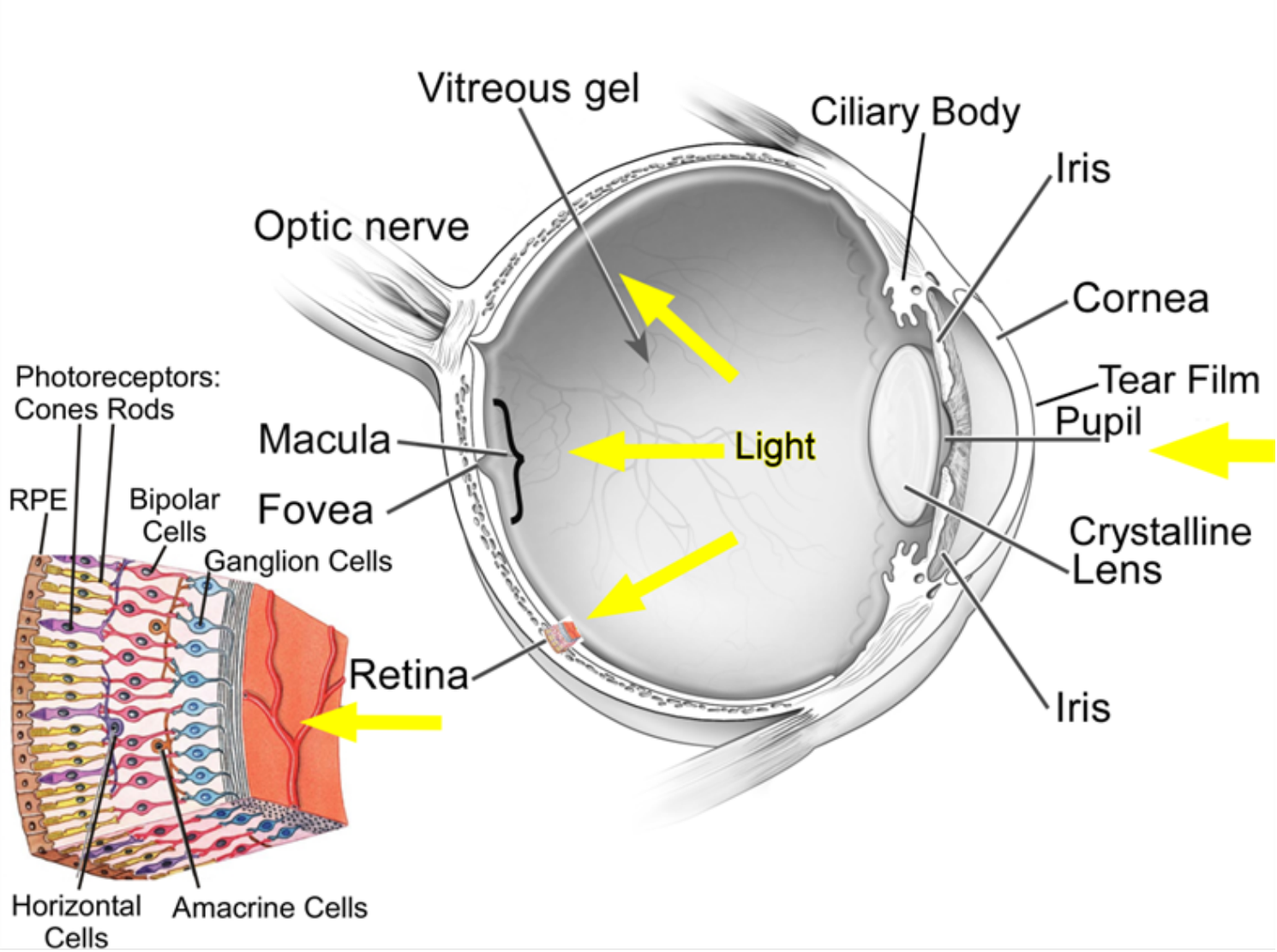
http://andreoulab.net

Make Chip

YOU 

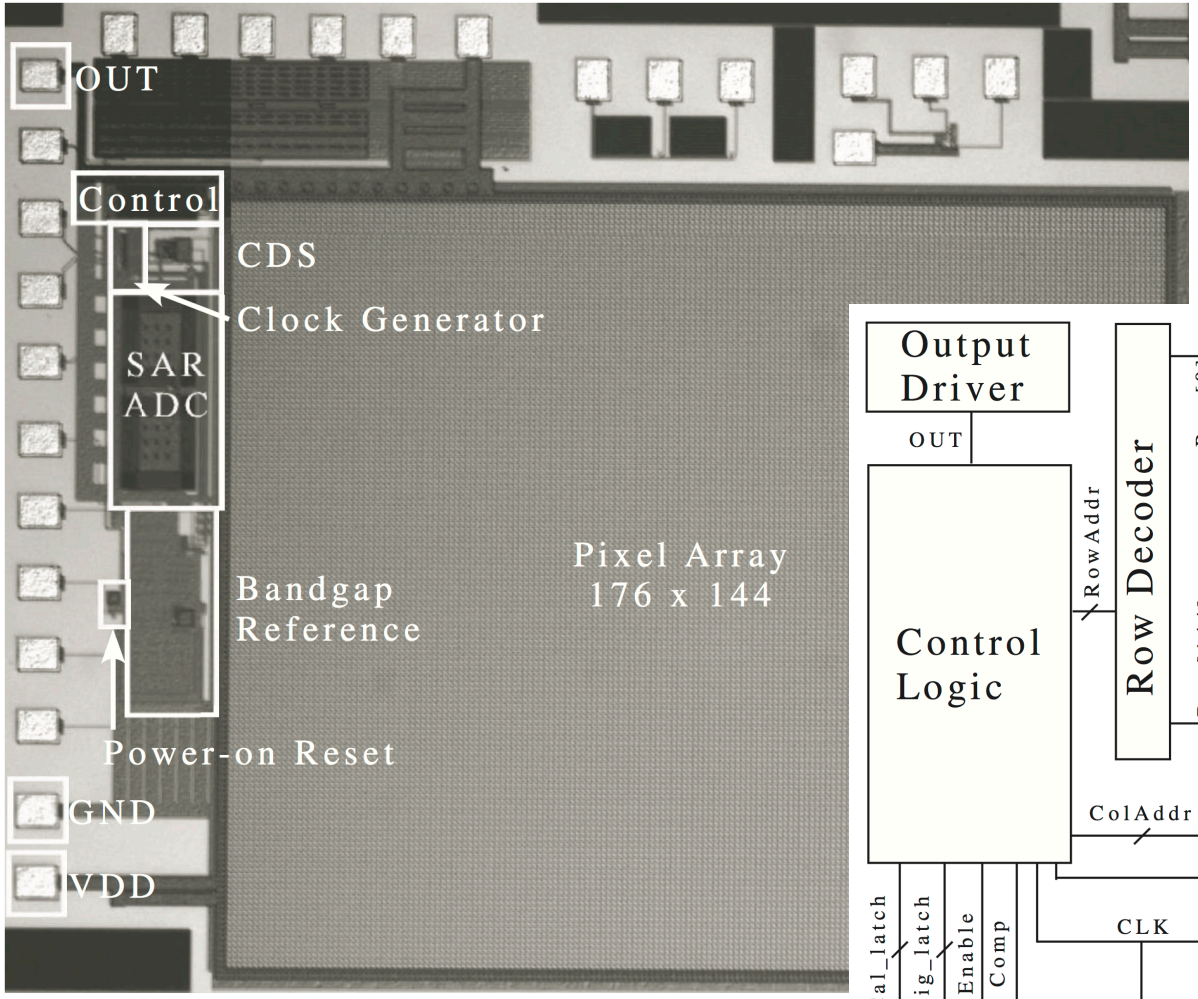

See

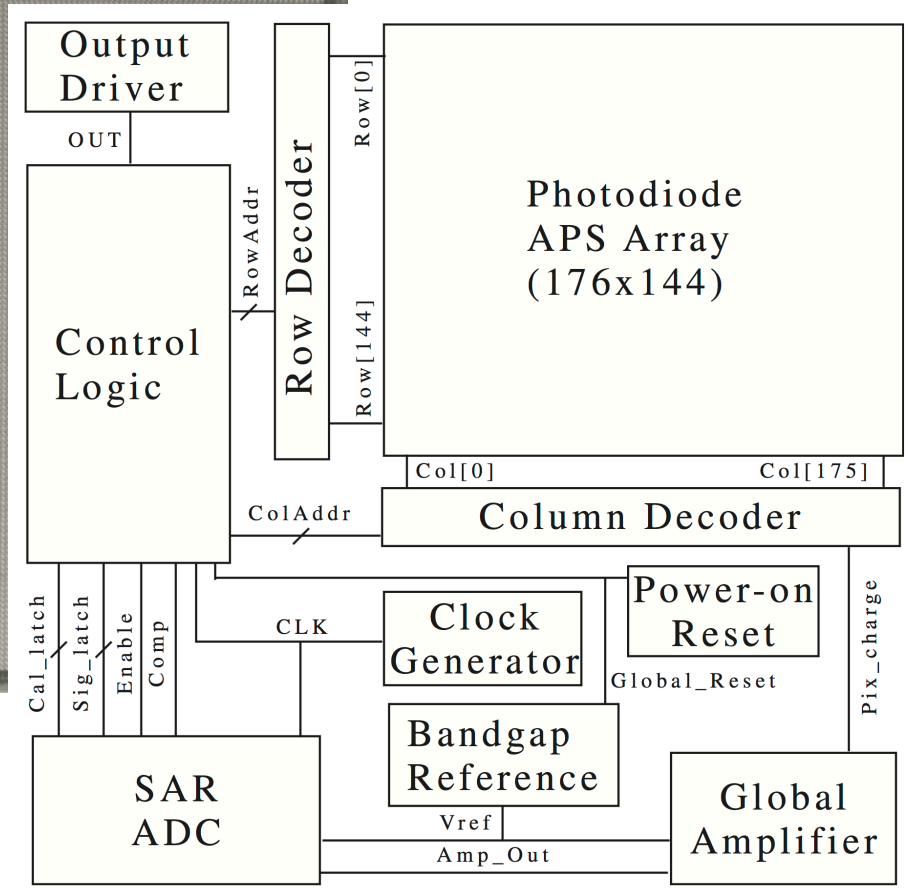
# How Do We See (Human Retina Architecture)




Fuensanta A. Vera-Díaz and Nathan Doble (2012). The Human Eye and Adaptive Optics, Topics in Adaptive Optics, Dr. Bob Tyson (Ed.), ISBN: 978-953-307-949-3, InTech, DOI: 10.5772/31073.
http://www.intechopen.com/books/topics-in-adaptive-optics/the-need-for-adaptive-optics-in-the-human-eye

# How Do Cameras See (CMOS Imager Architecture)



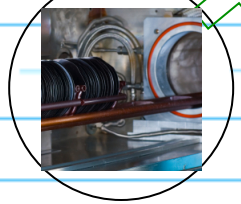




J. H. Lin, R. Özgün, P. O. Pouliquen, A. G. Andreou, C. M. Andreou, and J. Georgiou, “A 3-pin {1V} 115{u}W 176{x}144 autonomous active pixel image sensor in {0.18}{u}m {CMOS},” presented at the Proceedings of the 2011 IEEE International Symposium on Circuits and Systems (ISCAS), 2011, pp. 1568–1571.

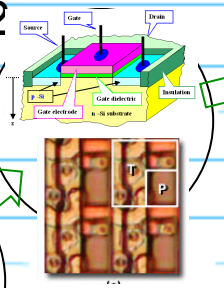
# Make a Chip That Sees in 13 Weeks

520.216

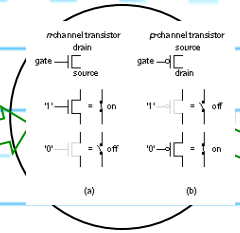
Week 1



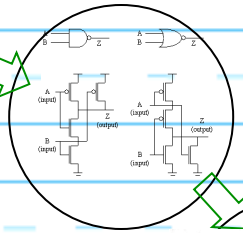
Week 2



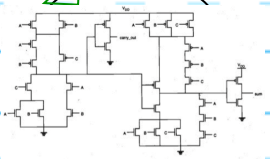

Week 3



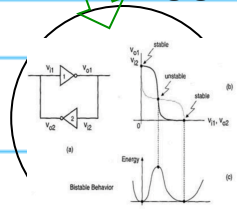

Week 4



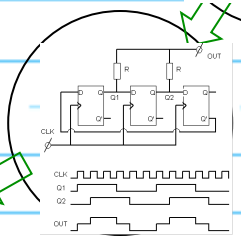
Week 5



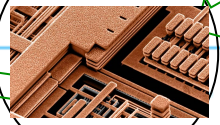
Week 6



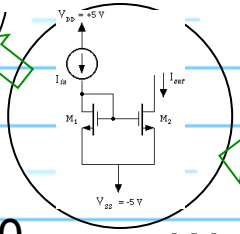
Week 7




Week 8

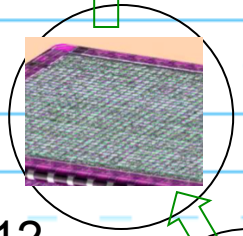


Week 9

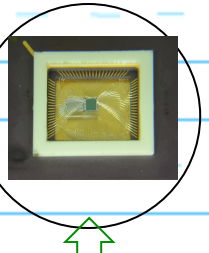



Week 10


Week 11

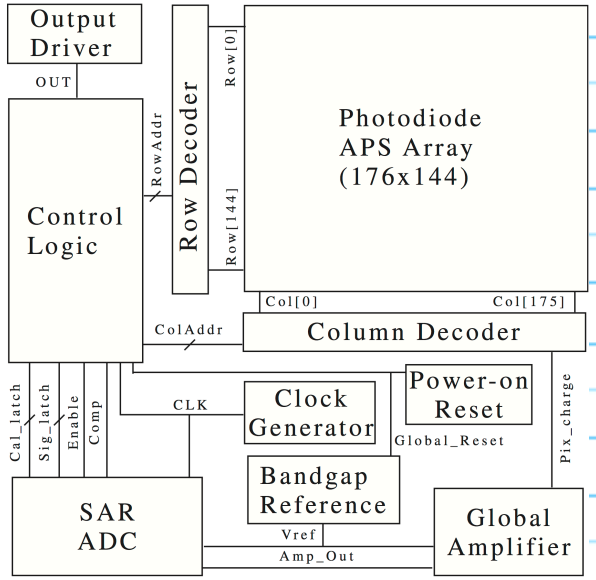


Week12



Week 13






The idea for this diagram was inspired by: msromney.org/room222