

Chapter II. The Travels of a Photon: Natural Image Statistics and the Retina

Supplementary contents at <http://bit.ly/3aeW07Z>

(Stryer 1996, Wade 1998)

2.1. Natural images are special

(Attneave 1954, David et al 2004, Felsen & Dan 2005, Lettvin et al 1968, Li 2014, Okazawa et al 2015, Pamplona et al 2013, Sanchez-Giraldo et al 2019, Schwartz & Simoncelli 2001, Simoncelli & Olshausen 2001, van der Schaaf & van Hateren 1996)

2.2. Efficient coding by allocating more resources where they are needed

(Attneave 1954, Barlow 1972, Barlow 1953, Barlow 1958, Brenner et al 2000, Brunel & Nadal 1998, Dan et al 1996, Fairhall et al 2001, Ganguli & Simoncelli 2014, Hecht et al 1942, Laughlin et al 1998, Olshausen & Field 2004, Olshausen & Field 1996, Simoncelli & Olshausen 2001, Smirnakis et al 1997, Smith & Lewicki 2006)

2.3. The visual world is slow

(Foldiak 1991, Stringer et al 2006, Wiskott & Sejnowski 2002)

2.4. We continuously move our eyes

(Andrews & Coppola 1999, Coppola & Purves 1996, Ditchburn & Protchard 1960, Engbert & Kliegl 2003, Irwin et al 1983, Itti & Koch 2001, Klein 2000, Kowler 2011, Martinez-Conde & Macknik 2016, Martinez-Conde et al 2004, Martinez-Conde et al 2006, Najemnik & Geisler 2005, O'Regan & Levy-Schoen 1983, Rayner 1998, Robinson 1964, Ross et al 2001, Tatler et al 2011, Wurtz 2008, Yarbus 1967, Zhang et al 2018)

2.5. The retina extracts information from light

(Anstis 1974, Barlow 1958, Baylor et al 1979, Darwin 1859, Dowling 2012, Field et al 2010, Hartline 1938, Hecht et al 1942, Helmstaedter et al 2013, Joesch & Meister 2016, Lee 2002, Masland 2012, Nathans 1989, Nathans et al 1986, Ramon y Cajal 1906, Rizzo et al 2003, Sachse et al 2017, Sacks 1997, Sakitt 1972, Sanes & Masland 2015, Stratton 1896, Tinsley et al 2016, Weiland et al 2005, Winter et al 2007, Yau 1994)

2.6. It takes time for information to reach the optic nerve

(Berry et al 1999, Gollisch & Meister 2008, Levick 1973, Meister & Berry 1999)

2.7. Visual neurons respond to a specific region within the visual field

(Anstis 1974, Barlow 1953, Gollisch & Meister 2008, Hartline 1938, Keat et al 2001, Kuffler 1953, Meister et al 1995, Pillow et al 2008, Sanes & Masland 2015, Warland et al 1997, Watson 2014)

2.8. The difference-of-Gaussians operator extracts salient information and discards uniform surfaces

(Barlow 1953, Barlow 1958, Brivanlou et al 1998, Dayan & Abbott 2001, Meister & Berry 1999, Shapley & Victor 1978)

2.9. Visual neurons show transient responses

(Berry et al 1999, Dayan & Abbott 2001, Helmstaedter et al 2013, Koch et al 1982, Masland 2012, Sanes & Masland 2015, Wandell 1995)

2.10. Onto the rest of the brain

(Douglas & Martin 2004, Felleman & Van Essen 1991, Gross 1994, Jones 2006, Piscopo et al 2013, Sherman 2001, Sherman & Guillery 2006, Stanley et al 1999) (Alonso et al 1996, Dan et al 1998, Marshel et al 2012, Reinagel 2001, Stanley et al 1999, Sur et al 1988, Usrey et al 1998, von Melchner et al 2000, Wikipedia 2020)

2.11. Digital cameras versus the eye

(Gu et al 2020, Mahowald & Mead 1991)

2.12. References

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