

Press release

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Basic information

Name: Daniel Gramm Kristensen

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Department of: Clinical Medicine

Main supervisor: Kristian Sandberg

Title of dissertation: Uncertain Principles and Visual Information

Date for defence: August 29th at (time of day): 14:00 Place: Merete Barker Auditoriet, bygning 1253, lokale 211 (Søauditorierne).

Press release (Danish)

Fundamentale Principper for Biologisk Visuel Informationsprocessering

Undersøgelsen af de fundamentale principper for biologisk visuel informationsprocessering er et nyt ph.d.-projekt fra Aarhus Universitet, Health. Projektet er gennemført af Daniel Gramm Kristensen, der forsvaret det d. 29/08

Hvordan den oplevede visuelle verden opstår fra neural aktivitet i hjernen er i dag til stadighed et mysterium. Ved hjælp af funktionel Magnetisk Resonans Billeddannelse undersøgte vi egenskaberne ved populationer af visuelle receptive felter, hvor vi opdagede et princip der kunne forklare deres organisering. Denne opdagelse blev basis for udviklingen af en teoretisk ramme for biologisk visuel informationsprocessering der drager nytte af principper fra kvantemekanikken, elektroteknikken og informationsteori. Vi testede nogle af de forudsigelser som denne teoretiske ramme gav ved at designe et psykofysisk eksperiment med visuelle illusioner. Vi fandt, at de observerede effekter var i overensstemmelse med teoriens forudsigelser, men at der stadig er meget arbejde at gøre for at verificere dette resultat samt at forfine teorien. Den succesfulde etablering af en teori der er i stand til at udlægge de fundamentale principper for biologisk informationsprocessering har stort potentiale for også at kunne anvendes inden for andre perceptuelle modaliteter, men også for vores forståelse af perceptuelle forstyrrelser. Forsvaret af ph.d.-projektet er offentligt og finder sted den 29/08 kl. 14 i Merete Barker auditoriet, Aarhus Universitet, Bartholins Allé 3, 8000 Aarhus C. Titlen på projektet er "Uncertain Principles and Visual Information". Yderligere oplysninger: Ph.d.-studerende Daniel Gramm Kristensen, e-mail: dgramm@cfin.au.dk, tlf. 40815244.

Bedømmelsesudvalget består af:

Mikkel Wallentin, Associate Professor (formand for bedømmelsesudvalget).
Institut for Klinisk Medicin, Center for Funktionel Integrerbar Neurovidenskab
Aarhus Universitet

Peter Kok, Senior Research Fellow
Wellcome Centre for Human Neuroimaging
University College London

Serge Dumoulin, Professor
Department of Experimental Psychology
Utrecht University
Department of Experimental and Applied Psychology
Vrije Universiteit Amsterdam

Press release (English)

Fundamental Principles for Biological visual Information Processing.

The investigation of the fundamental principles for biological visual information processing is a new ph.d.-project at Aarhus University, Health. The project was carried out by Daniel Gramm Kristensen, who is defending his dissertation on 29/08.

How visual experience arises from neural activity in the brain is still a mystery. Using functional Magnetic Resonance Imaging, we examined the properties of visual population receptive fields, and we discovered a principle that could explain their organisation. This discovery served as the basis for the development of a theoretical framework for biological visual information processing that draws on principles from quantum mechanics, electronic engineering and information theory. We tested some of the predictions of this theoretical framework by designing a psychophysical experiment with visual illusions. It was found that the observed effects were in agreement with the predictions of the theoretical framework, yet more research is required to verify this result and to refine the theoretical framework. The successful establishment of a theory that lays out the fundamental properties of biological information processing holds great potential for application in other perceptual modalities, but also in understanding perceptual disorders. The defence is public and takes place on 29/08 at 14:00 in The Merete Barker Auditorium, Aarhus University, Bartholins Allé 3, 8000 Aarhus C. The title of the project is "Uncertain Principles and Visual Information". For more information, please contact PhD student Daniel Gramm Kristensen, email: dgramm@cfin.au.dk, Phone +45 4081 5244.

The Assessment committee consists of:

Mikkel Wallentin, Associate Professor (Committee chairman).
Department of Clinical Medicine, Center of Functionally Integrative Neuroscience
Aarhus University

Peter Kok, Senior Research Fellow
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