

Personal details

Phone: (310).400.9410
Nationalities: Israeli , French
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Languages:

English, Hebrew, French.
 Basic knowledge of Chinese, Czech

Current position

Post-doctoral research fellow in the Computation and Neural Systems program at the California Institute of Technology ('Caltech') and the Department of Neurosurgery at the University of California – Los Angeles ('UCLA').

Advisors: *Christof Koch ('Caltech'); Itzhak Fried ('UCLA')*

Research interests *Attention, Consciousness, Emotions, Dreams*
Methods *Single-neuron recordings in humans, eye-tracking, fMRI*

Summary of technical qualifications (previously working as a Security Consultant for various high-tech companies)

- Extensive experience of research and development in cryptanalysis, application security and networks level security.
- Experience in Application Penetration Testing.
- Proven ability to analyze, plan, and manage projects.
- Combine an ability to understand core technologies and business ramifications.
- Hands on experience with design, coding and testing of products.
- Has an aptitude for training and customer relation assignments.
- Recommendations and references from customers, managers, and colleagues can be received upon demand.

Education

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| 2009 - | Post-doctoral Research Fellow | Computational Neuroscience Department of Neurosurgery | Caltech UCLA |
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Projects:

- Single-neuron recording in humans viewing emotional scenes.
- Eye-tracking of healthy controls and subjects with prosopagnosia watching social scenes (with Brad Duchaine at UCL and Doris Tsao).
- Studying dreams and attention during sleep, in humans (single-neuron recording) and mice (Optogenetics) (with Asya Rolls at Stanford).

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|-------------|------------------------------------------|------------------------------------------------|
| 2005 - 2009 | PhD in Computational Neuroscience | California Institute of Technology ('Caltech') |
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Advisor: *Christof Koch*

Thesis: Competition and Attention in the human brain

T.A: *'Introduction to Computational Neuroscience' (CNS 100), 'Neural Computation' (CNS 187), 'The neuronal basis of consciousness' (CNS 120), 'Brains, Minds and Society' (CNS 102)*

Affiliated with the 'Interdisciplinary Center for Neural Computation ('ICNC') at the Hebrew University of Jerusalem

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| 2006 | Bachelors in Fine Arts (incomplete) | Art Center College of Design |
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Studies in the Digital Media program in the *Art Center at Night* program.

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| 2001 | M.A. in Philosophy of Science | Tel-Aviv University |
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Advisor: *Isaac Ben-Israel*

Thesis: *"On the mind-body problem – without the mind. A scientific explanation to Consciousness".*

Graduated summa cum laude.

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| 1998 – 2000 | B.Sc. in Physics | Tel-Aviv University |
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Extensive amount of interdisciplinary studies in Biology, Medicine, Computer Science, Law, Literature, History, Film, Psychology, Linguistics.

T.A: *'Theoretical methods in Physics' (Physics, 2nd year), 'Internet security' (Computer Science, 3rd year)*

Honors and Awards

2009 – Selected as 'hot topic' in the Society for Neuroscience annual conference

2009 – Good Clinical Practice (GCP), UCLA

2007 – Best poster, Eye-Tracking Research and application conference.

2005 – Winner of the Weizmann Institute short-stories competition in memory of Ofer Lider.

2004 – Awarded full-tuition scholarship for the year 2005. *Tel-Aviv University*.

2004 – Winner of 1st prize in the Jerusalem film festival. Category: 'Short films', for the film: *"Parrots"*.

2003 – President Scholarship for Excellent Ph.D. students. *4 Years scholarship. Bar-Ilan University*.

2001 – Master's thesis, summa cum laude.

1997 – Israeli Defense Forces: award for contributing to a top-secret intelligence-gathering project.

1994 – Ministry of Education award for an excellent dissertation ('Artificial Intelligence').

Member

Association for the Scientific Study of Consciousness (ASSC), Society of Neuroscience (SfN), Skeptics Society, Cognitive Neuroscience Society (CNS)

Reviewer

Invited referee for a number of top academic journals and conferences, including Journal of Vision, Vision Research, LNCS, European Association for Computer Graphics, Journal of Computer Science and Technology, NIPS and others.

Professional Experience

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| 2003 – 2005 | Senior Security Consultant | iMPERVA |
| Security consultancy and research in the Application Defense Center. Performing penetration tests for banks, governmental sites and companies. Writing security advisories and probing security holes while suggesting innovative defense mechanisms. Assisting the company's pre-sales, and the marketing team. | | |
| 2002 - 2003 | Customer Trainer, Product Architect | TTI Telecom |
| In charge of designing a new Servers and Applications Management system, for a big Chinese 3G provider. Focal point for company security matters, in charge security-related proposals and bids, and internal/external security queries. Customer trainings on Telephony Networks/Cellular Networks all-over the world (Europe, U.S., Far-East, Australia). | | |
| 2000 – 2002 | R&D Trainer | Check Point Software Technologies |
| Senior trainer for the entire R&D department. Training on various technological subjects. In charge of the R&D certification exams (CCSA, CCSE), and of the courseware authoring. Part of several projects involving marketing, customer relations, and technical papers publication. | | |
| 2000 | Inventor | S.I.T |
| Leading workshops and guiding groups towards products enhancements and Systematic Inventive Thinking. | | |
| 1998 - 2000 | Software Developer, Team Leader | Log-On Software |
| Worked for various Israeli start-up companies on behalf of Log-On. Programmed in various platforms and technologies. In charge of defining, planning and supervising all aspects of the products, as well as the design of the GUI. | | |

Periodically

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| Freelance Trainer | Teaching programming languages, design patterns, Unix administration and various security courses. | Science consulting | Providing scientific consultancy for films on behalf of the <i>American Film Institute (AFI)</i> |
| Columnist | Weekly column for 'People and Computers' journal. | Security forum manager | Managed <i>John Bryce's</i> security forum. |
| Patents consultant | Writing patents for medical start-up companies | | |

Army

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| 1995 - 1998 | Intelligence | Israeli Defense Forces (IDF) |
| Participant in a special project for outstanding youth (" <i>Haman Talpiyot</i> ") after extensive training. Directed classified projects requiring systematic research and analysis, and original solutions for particularly difficult problems, which made use of logical skills, languages-learning capabilities, and knowledge of communication protocols and encryption schemes. In the last year - built the unit's web-based knowledge base. | | |

Technical Skills

OS: Windows, Unix, Linux, MF
Programming: C/C++, MFC, VB, ASP, PHP, JavaScript, Python, Perl, csh, Pascal, Assembly, CGI, CSS, VRML, WML, FORTRAN, Matlab;
Networking: Database administration.
Security: Application penetration testing, Security Code Review and analysis, Security System Acceptance, Auditing, Firewalls and IDS administration, security and cryptography training.
Multimedia: Maya, Photoshop, Flash, 3D Max, Premiere, AVId, FreeHand, CorelDraw, Combustion, After Effects, Illustrator and others.

Selected Projects

Nextel – Applications Security Audit.
Hutchison Hong Kong – Designing of an internal system for security management.
Leumi Bank – Ongoing security assessments of online and internal banking applications. Application Penetration testing.
First International Bank of Israel - Security audits on a monthly base.
Check Point OPSEC partners – Training the OPSEC partners and Check Point's SEs on incoming security technologies.
 Application Penetration testing of various medical organization and classified Israeli defense and military institutions.

Other

Pianist, filmographer, painter.
 Writer of short stories, Comics, and a Hebrew novel: '*Disease*'.
 Participated in TV series while studying at the School of Arts (1984-1992): '*Catching Heads*'
 Holds an air pilot certificate. Cliff climber, Scuba Diver.
 Representative at the Student Council - three consecutive terms. At the final term – the Council's Vice President.

Selected Publications

peer-reviewed, **under review**, **conference abstracts**, **invited talks**, **book chapters**

Theses

(2009) – '[Competition and Attention in the human brain](#)' - *Ph.D thesis, California Institute of Technology.*

(2002) – '[On the mind-body problem – without the mind](#)' - *Master's thesis, Tel-Aviv University.*

Vision

(2009) – '[Faces and text attract gaze independent of the task: Experimental data and computer model](#)' - **Moran Cerf**, Paxon Frady, Christof Koch, *Journal of Vision*, 9(12):10, 1-15.

(2009) - '[The role of amygdala in orienting attention to eyes within complex social scenes](#)' - Elina Birmingham, **Moran Cerf**, Ralph Adolphs, *Vision Sciences Society (VSS)*.

(2008) - '[Subjects' inability to avoid looking at faces suggests bottom-up attention allocation mechanism for faces](#)' - **Moran Cerf**, Paxon Frady, Christof Koch, *Society for Neuroscience (SfN 2008)*.

(2008) - '[Distinct roles for eye and head movements in selecting salient image parts during natural exploration](#)' - Wolfgang Einhäuser, Frank Schumann, Johannes Vockeroth, Klaus Bartl, **Moran Cerf**, Jonathan Harel, Erich Schneider, Peter König, *Annals of the New York Academy of Sciences*, Volume 1137.

(2008) - '[Decoding what people see from where they look: predicting visual stimuli from scanpaths](#)' - **Moran Cerf**, Jonathan Harel, Alex Huth, Christof Koch, *Lecture Notes in Artificial Intelligence, LNAI 5395, Springer.*

(2008) - '[Decoding what people see from where they look: predicting visual stimuli from scanpaths](#)' - **Moran Cerf**, Jonathan Harel, Alex Huth, Wolfgang Einhäuser, Christof Koch, *Proceedings of the International Workshop on Attention and Performance in Computational Vision, (WAPCV 2008)*.

(2008) - '[True and Spurious Face Detections Attract Attention during Free Exploration](#)' - Wolfgang Einhäuser, Frank Schumann, Johannes Vockeroth, Klaus Bartl, **Moran Cerf**, Jonathan Harel, Christof Koch, Erich Schneider, Peter König, *Proceedings of the International Workshop on Attention and Performance in Computational Vision, (WAPCV 2008)*.

(2008) - '[Using semantic content as cues for better scanpath prediction](#)' - **Moran Cerf**, E. Paxon Frady, Christof Koch, *Proceedings of the symposium on Eye tracking research & applications, (ETRA 2008)*.

(2007) - '[Observers are consistent when rating image conspicuity](#)' - **Moran Cerf**, Dan R. Cleary, Rob J. Peters, Wolfgang Einhäuser, Christof Koch, *Vision Research, Volume 47, Issue 27, Pages 3052-3060*.

(2007) - '[Predicting human gaze using low-level saliency combined with face detection](#)' - **Moran Cerf**, Jonathan Harel, Wolfgang Einhäuser, Christof Koch, *Advances in Neural Information Processing Systems, Vol. 21 (NIPS 2007)*.

Direct recording from the Human Brain

(2009) – '[On-Line Voluntary Control of Single Neurons by Human Thought](#)' - **Moran Cerf**, Nikhil Thiruvengadam, Florian Mormann, Alexander Kraskov, Rodrigo Quian-Quiroga, Christof Koch, Itzhak Fried

(2009) – '[Competition and attention in the human brain](#)' – New York University.

(2009) – '[On-Line Voluntary Control of Single Neurons by Human Thought](#)' - **Moran Cerf**, Nikhil Thiruvengadam, Florian Mormann, Alexander Kraskov, Rodrigo Quian-Quiroga, Christof Koch, Itzhak Fried, *Society for Neuroscience (SfN 2010)*.

(2009) – '[Changes in firing of human medial temporal lobe neurons reflect the novelty of the stimuli](#)' - Carlos Pedreira Gallego, Florian Mormann, Alexander Kraskov, **Moran Cerf**, Itzhak Fried, Christof Koch and Rodrigo Quian Quiroga, *Proceeding of the National Academy of Science, 2009*.

(2008) - '[Single neurons in the human MTL during visual working memory and rapid series visual presentation](#)' - Florian Mormann, Simon Kornblith, Rodrigo Quian-Quiroga, Alexander Kraskov, **Moran Cerf**, Christof Koch, Itzhak Fried, *Society for Neuroscience (SfN 2008)*.

(2008) – '[Latency and selectivity of single neurons indicate hierarchical processing in the human medial temporal lobe](#)' - Florian Mormann, Simon Kornblith, Rodrigo Quian Quiroga, Alexander Kraskov, **Moran Cerf**, Itzhak Fried, Christof Koch, *Journal of Neuroscience, 2008*.

(2007) – '[Conscious control of a single neuron in the human MTL using imagery, visual and auditory feedback](#)' - **Moran Cerf**, Florian Mormann, Alexander Kraskov, Rodrigo Quian Quiroga, Itzhak Fried, Christof Koch, *Society for Neuroscience, (SfN 2007)*.

(2007) - '[Dynamics of selective single neurons in the human MTL in a visual working memory task](#)' - Florian Mormann, Rodrigo Quian-Quiroga, Alexander Kraskov, **Moran Cerf**, Itzhak Fried, Christof Koch, *Society for Neuroscience (SfN 2007)*.

Neuro-Economics

(2008) - '[What Matters is Attention not Intention: Insights from Computational Neuroscience of Vision](#)' - Milica Milosavljevic, **Moran Cerf**, *International Journal of Advertising, Volume 27, Number 3*.

Philosophy of Science

(2005) - '[What is it like to be Beethoven?](#)' - **Moran Cerf**, Avshalom C. Elitzur, World Scientific Publishing Co., 2005.

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| Patents | (2008) – <u>Magnetic Breather Pump for delivery of Chemotherapeutic agents into the brain</u> – Pharmaco-Kinesis. Filed July, 2008. |
| | (2007) - ' <u>Automatic Prediction of Human Gaze in Visuals by Localizing High-Level Elements</u> ' - Christof Koch, Moran Cerf , Paxon Frady. Provisional patent application CIT-5033-P, filed November 19, 2007. |
| Security Research | (2005) - ' <u>File Access and Denial of Service Vulnerabilities in Business Objects “Crystal Report”</u> ' – Moran Cerf , Amichai Shulman, <i>Bugtraq. ID: 10260</i> |
| | (2004) – ' <u>How safe is it out there ?</u> ' – Moran Cerf , Amichai Shulman, <i>Security Focus</i> |
| | (2004) – ' <u>SuperVeda Penetration Test. Demonstration of a website hacking</u> ' – Moran Cerf , Amichai Shulman, <i>Security Focus</i> |
| Journal | 'People and Computers', Ma'ariv (Israeli leading daily news), Ha'aretz and more. (see www.morancerf.com for an updated list) |

Current projects

Visual attention allocation in individuals with neurological and psychiatric disorders – with Ralph Adolphs (autism, amygdala-lesion), Lynn Paul (AgCC), Brad Duchaine (Prosopagnosia) and Christof Koch

Attention allocation to faces in prosopagnosia subjects showing no face area - with Brad Duchaine and Doris Tsao

Study of the amygdala as the neural correlate of the experience of fear – with Ralph Adolphs (empathy and complex emotions regulation), Elina Birmingham (eye-tracking of amygdala-lesion orienting to eyes/mouth), Christof Koch (neural correlate of the experience of fear) and Itzhak Fried (single neuron recordings during exposure to emotional scenes)

Study of complex emotion ('happiness') in humans

Applications of attention studies in neuroscience to marketing (with Milica Milosavljevic) and business (with Yaniv Konchitchki)

Modeling of competition between imagery and vision in the medial temporal lobe – with Christof Koch

Studies of rapid bottom-up attention mechanism using the saliency model – with Michael MacKay and Christof Koch

Dreams and consciousness mechanisms during sleep in humans (using single neuron recordings with Itzhak Fried) and mice (using optogenetics with Asya Rolls)