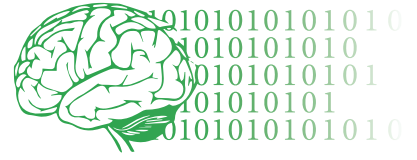


NeuroIS SOCIETY



The NeuroIS Society Magazine

2023 | No. 1



COVER STORY

Understanding Technology
“Addictions” Through NeuroIS
Research

IN THE SPOTLIGHT

McMaster Digital
Transformation
Research Centre

YOUNG ACADEMICS

Mahdi Mirhoseini
Concordia University
Canada

Preface

Dear Readers!

In 2022 we published the first two issues of the NeuroIS Society Magazine. Many people praised the interesting reports and background information on research groups and community members. Now you are reading the first issue of 2023. Just as in the 2022 issues, in the current one you can find several stimulating contributions and reports.

Ofir Turel, Antoine Bechara, and Qinghua He—three internationally recognized researchers—co-authored this issue’s cover story entitled “Understanding Technology ‘Addictions’ Through NeuroIS Research”. Some time ago, Dr. Turel started to investigate video game addicted children and technology addictions in general. In the beginning he used behavioral research approaches. However, later he teamed up with Dr. Bechara, a top neuroscientist whose research focuses, among others, on the neural mechanisms underlying human decision-making. Also, Dr. He, today professor at Southwest University in China, joined the team. In essence, what the research team found during the past decade is intriguing. The three researchers explored, among others, whether technology addictions are sub-served by the same brain imbalances and deficits that prior studies had observed in substance or gambling addictions. Important knowledge, which is summarized in the cover story, is not only of great relevance for theoretical progress, but also holds significant value for the design of interventions in practice. What follows is that this research program is a fascinating example for the enormous application potential of NeuroIS knowledge.

The current issue also reports on the McMaster Digital Transformation Research Centre (MDTRC). MDTRC is part of the DeGroote School of Business at McMaster University, Canada, a research intensive institution. MDTRC hosts a variety of multidisciplinary academics with a significant track record of publications in top academic journals. It is also a key mandate of the Centre to host and support the training of students and highly-qualified-personnel that engage in multidisciplinary research in order to develop specialized and diverse skill sets. MDTRC houses four distinct types of labs funded by the Canada Foundation for Innovation and the Ontario Ministry of Research & Innovation that are uniquely designed around how people normally interact with technology in their daily lives in a myriad of natural professional, educational, social, and personal settings. Milena Head, Director of MDTRC, presents these four labs and provides further background information on the research studies and their significance.

In the current issue we also present an interview with ChatGPT on NeuroIS. In essence, it is fascinating to see how Artificial Intelligence (AI) technology can provide sharp answers to questions like how Information Systems (IS) scholars can benefit from the use of neurophysiological measurement tools or why researchers should participate at the annual NeuroIS Retreat. Importantly, in the future NeuroIS researchers could also explore human interaction with AI systems like ChatGPT in order to reveal the psychophysiological mechanisms related to important outcome variables such as trust, satisfaction, technology acceptance, and perceived decision-quality, among others. Moreover, in the current issue we summarize important key facts about the NeuroIS Retreat – this year we are celebrating the 15th anniversary and it was exactly 5,000 days before the current event that the inaugural NeuroIS Retreat took place in Gmunden, Austria, in September 2009.

In the section “The Practitioner’s Perspective” we interviewed Hector Hughes, CEO of Get Unplugged Limited, UK. Among others, Hector describes major services of his company in the domain of digital detoxing and his successful cooperation with an international research team that examined whether a multi-day digital-detox experience during holidays can influence personal well-being. In the section “Young Academics” we interviewed Mahdi Mirhoseini, who works at John Molson School of Business, Concordia University, Canada. In the interview, Mahdi talks about his start with NeuroIS research, the challenges for young researchers, and important moments in his academic career. In the section “Looking Back” this time we present the first best reviewer award winner, which was brought into being in 2018 in the context of the 10th anniversary of the NeuroIS Retreat. Marc T. P. Adam, a well-known member in the NeuroIS community and a person who is dedicated to high-caliber research, won the first best reviewer award.

This issue is published in the context of the 15th anniversary of the NeuroIS Retreat 2023, May 30 – June 1. In the second issue 2023, you will find documentation of this anniversary event, as well as many other reports and stories. However, now please enjoy this current issue of the NeuroIS Society Magazine!

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Understanding Technology “Addictions” Through NeuroIS Research

By Ofir Turel, University of Melbourne (Australia), Antoine Bechara, University of Southern California (USA), and Qinghua He, Southwest University (China)

Reading “PlayStation Nation”¹, which documents the painful struggles of parents with their video game addicted children, intrigued Professor Ofir Turel and instigated his interest in technology “addictions”. So, around 2008 he started exploring this topic using a behavioral angle. These initial explorations have led to several important publications², including in the Senior Scholars’ List of Premier journals³⁻⁵.

Working on this topic required reading papers on addiction. They suggested that addiction can be understood from a medical perspective as a “brain disease”, manifested in an impairments or imbalances in the brain systems that govern decision making. The imbalance includes a hyper-active reward system (amygdala-striatum dependent) and a hypo-active self-control or inhibition brain faculties (prefrontal cortex dependent), as exacerbated by visceral signals resulting from withdrawal, deprivation from reward, depression, stress, and mediated through an interoceptive system (insula -dependent)⁶⁻⁸.

Like many other Information Systems (IS) scholars, professor Turel did not have the neuroscience training to fully comprehend the underlying mechanisms of technology “addictions”, as described by the abovementioned theories. Thus, in 2012, he approached professor Antoine Bechara at the University of Southern California (USC), a world renowned expert and leader in the neuroscience of decision making and addictions, with an ambitious request: to better understand the neural underpinnings of such addictions. Professor Bechara was intrigued by the unusual focus on technologies and has agreed to join forces for this line of work. Professor Qinghua He, who was back then a postdoctoral researcher at USC, also joined the team; he is now at Southwest University in China. Ten years later, this interdisciplinary team has produced dozens of impactful publications in IS, neuroscience and psychiatry outlets; and is still actively working on many new ones.

Qinghua He
Southwest University
(China)



Antoine Bechara
University of
Southern
California (USA)



Ofir Turel
University of
Melbourne
(Australia)



The path to these achievements was not easy. Professor Turel took courses in brain anatomy, functional MRI, addiction, and decision neuroscience, among others. The team had also struggled with bringing together neuroscience and IS research design and writing styles, which are not always compatible. In addition, both research fields were initially skeptical regarding the idea that medical addiction models can be applied to video gamers and social media users, especially since there is no agreement about what such addictions mean, as they are not yet formally defined. However, we benefited from invaluable advice from colleagues in the NeuroIS community, which allowed us to slowly progress toward a wider acceptance of technology “addictions”.

Eventually, academic journals, the media, and organizations focused on wellbeing have piqued their interest in the topic., given the growing prevalence rates of problematic use of technologies⁹. Consequently, the team’s impact went beyond academia (e.g., features by the Wall Street Journal, Washington Post, numerous radio and TV stations, and a presentation to the Chilean Senate for policy development purposes.) The insights we obtained over the years were also shared with IS colleagues through conference panels¹⁰, including at the 2021 NeuroIS Retreat where professor Turel was a panelist, and professor Bechara was the keynote speaker. Moreover, the obtained neuroscientific insights have informed new behavioral studies¹¹⁻¹³. Ultimately, this research stream has revealed important brain-behavior links that can help with self-regulating use¹⁴ or treating technology “addictions”¹⁵.

What did we do and find?

Traditional medical addiction research had pointed to functional, structural and connectivity deficits in people who present addictive behaviors¹⁶. We therefore ventured to explore whether technology addictions are sub-served by the same brain imbalances and deficits that the research community had observed in substance or gambling addictions.

A Functional Perspective

Our first study¹⁷ used an fMRI Go/No-Go paradigm with Facebook users. It aimed at examining the sources of the reward system – inhibition system imbalance in Facebook users and whether this imbalance sub-serves Facebook “addiction”. We used Facebook (target) and street sign (neutral) stimuli. Behavioral results showed that Facebook stimuli are very potent. The false alarm rate was significantly higher in Sign Go than in Facebook Go conditions; go-trial response time was shorter for Facebook stimuli, and no-go-trial response time was shorter for sign stimuli. Functionally, the findings showed that the inhibitory control system was engaged in Facebook no-go tasks to the same extent it engaged in sign no-go tasks. Lastly, the findings showed that addiction scores were positively correlated with ventral striatum activation (a key region in the reward system) in Facebook go-trials, but not with activation of the inhibition brain system. These results have led us to conclude that Facebook “ad-

diction” is sub-served by hyper-sensitive reward system, like in the case of substance addictions, but importantly, different from many substance-addictions, there was no impairment in the inhibition system.

In another functional study¹⁸, this time of video gamers, we found that addiction scores correlated negatively with activity in the right dorsolateral prefrontal cortex (DLPFC) (a key region in the inhibitory or self-control system), and positively with activity in the right ventral striatum. The left insula became active in response to video game cues when users were deprived of gaming. Importantly, there was an increased coupling between the left ventral striatum and left insula. There was also a decreased coupling with left DLPFC in response to video gaming cues. These results highlight the importance of deprived gaming, via the insula, in possibly exacerbating the imbalance between the reward and inhibition brain systems in cases of technology “addictions”.



A Structural Perspective

We ventured to explore structural manifestations of technology addictions with Voxel-Based Morphometry (VBM) techniques. It is common in addictions to have a smaller amygdala-striatal system (the key neural system for reward seeking and habit forming) as a result of neuronal sensitization (i.e., the system becomes faster and more efficient at signaling reward). In a study of Facebook users⁷, we found that the volumes of the left and right amygdala regions were negatively associated with addiction scores. This is consistent with what has been observed in other addictions. We found the volume of the anterior cingulate cortex (ACC) to be positively associated with addiction scores. This is inconsistent with other addiction cases for illegal substances, where prefrontal and cortical volumes are typically reduced. We suggested that the addiction of Facebook users is not necessarily identical to those of heroin users (for example), in that they may engage in “healthy adaptation” that allows them to compensate for the observed sub-cortical changes in the amygdala.

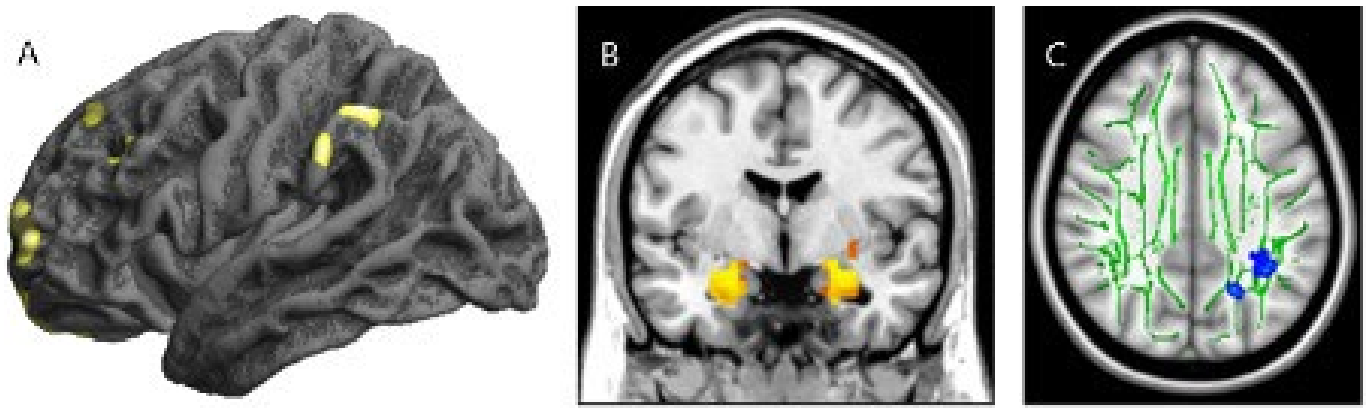


Figure 1. Our program of research relied on structural, functional, and DTI-based MRI to investigate the brain underpinnings of technology “addictions”: (A) Structural differences between Internet Gaming Disorder and neurotypical cases²⁰ (displayed in surface), (B) functional activity in ventral striatum/amygdala in Facebook go trials (displayed in coronal slice) positively correlated with addiction scores¹⁷, and (C) right Corticospinal Tract²¹ (displayed in axial slice) difference when comparing likely addicts with controls.

Similar results were obtained when we compared excessive vs “normal” social media users: There were morphological differences in left and right amygdala and left striatum (lower volumes in excessive users) but not in prefrontal regions⁸. Lastly, in another volumetric study¹⁹ we observed that the GMV of the bilateral posterior insula are negatively associated with addiction scores, and that the volumetric influence on addiction scores is mediated through the impaired delay discounting it subserves. Overall, in line with the functional results, we concluded that technology addictions are primarily rooted in reward-interoception systems volumetric differences, and less so in prefrontal changes. It is worth noting that social media use can also have benefits that manifest in volumetric changes in the brain. We found that Facebook use is associated with increased GMV in the posterior parts of the bilateral middle and superior temporal and left fusiform gyri. This suggests that social-semantic and mentalizing brain networks can benefit from more use.

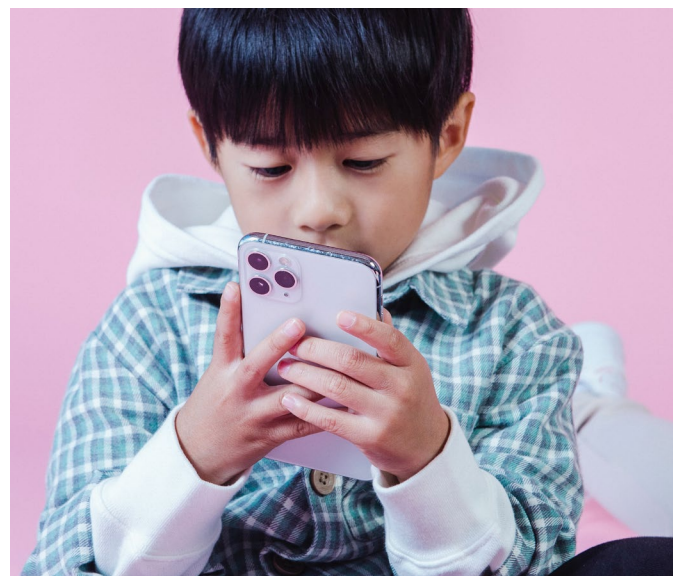
We also extended our volumetric research stream to video games²⁰. Comparing extensive League of Legends (LOL) gamers and non-gamers, using VBM, deformation-based morphometry, and cortical thickness and sulcus depth analyses, we found that there were bilateral ventromedial prefrontal cortex, left dorsolateral prefrontal cortex and left superior parietal lobule structural changes in excessive gamers. These reflect loss of control and are common in other addictions, but also reflect improved visuospatial skills.

A Connectivity Perspective

Addictions often relate to sub-optimal communication between the hemisphere through an inefficient corpus-callosum. We tested this with diffusion tensor imaging (DTI)²¹. We found support for this claim. While our other studies did not detect major prefrontal deficits in Facebook “addicts”, we found here a positive association between addiction scores and mean diffusivity of left superior and inferior longitudinal fasciculi, left forceps minor and fractional anisotropy of the right Corticospinal Tract. This is consistent with what is observed in other addiction cases. It suggests that inter-hemispheric connectivity issues may prevent some individuals from exerting their full inhibition power over social media stimuli.

Conclusion

Technology “addictions” affect many individuals. Our program of research had provided initial evidence for their brain underpinnings and paved the way for possible interventions. While challenging, the program has been successful in part due to the continued support of and advice from the NeuroIS community, for which we are extremely thankful.



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McMaster Digital Transformation Research Centre: Understanding and Improving the User Experience for All

by Milena Head, Director of McMaster Digital Transformation Research Centre (MDTRC)

Digital technologies are rapidly affecting all aspects of society including business, education, health, industry, and day-to-day life. At the MDTRC, our primary mandate is to engage in cutting-edge multidisciplinary research aimed at better understanding the implications of digital transformation in a wide range of contexts. We combine traditional behavioural tools such as surveys, focus groups and interviews with neurophysiological tools to help researchers gain a deeper, richer understanding of how we interact with technology. By synchronizing live analysis of facial expressions, eye-tracking, pupillometry, brain wave activity through electroencephalography, heart rate, breathing rate, and skin conductance, we gain a deeper and unbiased understanding of users' technology journey.

MDTRC is part of the DeGroote School of Business at McMaster University; a research intensive institution. MDTRC hosts a variety of multidisciplinary academics with a significant track record of publications in top academic journals. It is also a key mandate of the Centre to host and support the training of students and highly-qualified-personnel that engage in multidisciplinary research in order to developed specialized and diverse skill sets.

MDTRC houses four distinct types of labs funded by the Canada Foundation for Innovation and the Ontario Ministry of Research & Innovation that are uniquely designed around how people normally interact with technology in their daily lives in a myriad of natural professional, educational, social, and personal settings. The first is the Evidence Based Decision Making Lab, which enables investigation and enhancement of individual user experiences while interacting with various stationary and mobile Information and Communication Technologies. We have three Evidence Based Decision Making Labs to allow for experiments to be run in parallel. The focus here is on precise behavioural and neurophysiological measurement of users interacting individually with technology artefacts.

An example research project that would take place in our Evidence Based Decision Making Lab is an assessment of an e-commerce retail site where individuals with varying demographic and decision-making styles are given online shopping tasks to complete on desktop, tablet and/or smartphone devices. Through the triangulation and precise synchronization of eye tracking data with EEG, facial analysis, physiology and behavioural responses to survey and interview questions, we can gain a fulsome understanding of the highs and lows of the user journey throughout the decision-making process.

The second type of lab is the Reconfigurable User Experience Lab, which can be reconfigured to simulate a wide variety of social, educational, and professional contexts so experiments can take place in a more natural environment. Importantly, this lab allows for unobtrusive observation of multiple co-located individuals interacting with each other and with technology. Research in this lab recognizes that people often do not work with technology in isolation. Rather, technology is embedded in the social fabric of human interaction and we move in a fluid fashion between interacting face-to-face and with various technologies.

Dr. Milena Head is a Professor of Information Systems at DeGroote, Acting Director, McMaster Digital Transformation Research Centre the Wayne C. Fox Chair in Business Innovation and Academic Director of the EMBA program at the DeGroote School of Business.





An example research project that would take place in our Reconfigurable User Experience Lab is an investigation of technology interruptions and its subsequent technostress. In a simulated workplace meeting setting, when one member of the meeting team receives a technology interruption (such as a text message or email alert), what effect does their diverted attention have on the progress of meeting objectives and attitudes of meeting members? Those not directly using technology that caused the interruption may experience “second-hand” technostress due to the technology-based disruption. This is just one example of where we seek to gain insights on not just the opportunities that digital transformation generates, but also on the “dark side” of technology use and its potential negative impacts. In doing so, we pursue actionable strategies and designs to mitigate the negative effects of technology misuse.

The third type of lab is the Focus Group Room, where researchers can conduct or unobtrusively observe quali-

tative studies and discussions. All the neurophysiological devices available in the other labs can be utilized in this room to gather rich data for research insights. This room can also be used to monitor the live progress of experiments in other labs, providing insights in real time and allowing for dynamic creation of follow-up questions.

The fourth and newest type of lab that rounds out the MDTRC offering is the Mobile User Experience Lab (MUXL). This unique mobile lab allows us to take our full research infrastructure to wherever digital transformation phenomena occur. It allows us to study participants in the field, in natural personal, social, and professional contexts. The vehicle houses a User-Experience lab designed to remove inclusion and accessibility barriers for segments of the population that are typically underrepresented in research, difficult to recruit, or would otherwise be discouraged to participate in studies due to various barriers (e.g., mobility).



Dr. Khaled Hassanein at MDTRC
Dean, DeGroote School of Business
McMaster University

Dr. Milena Head



An example research project that would take place in our MUXL is understanding and improving digital accessibility for older adults. Older adults are the fastest growing segment of the population but the challenges they face when using technology are typically overlooked and not considered by designers. The natural process of aging is associated with declines in several cognitive and physiological abilities that puts older adults at a significant disadvantage when engaging with technology. They are often excluded and marginalized with respect to technology and this gap is deeply widened when we intersect lower socioeconomic factors, race, gender, and other factors with older adults. The MUXL allows researchers to go directly into the community to ensure marginalized populations are able to participate in research related to technologies that impact their health and wellbeing.

In sum, our different and uniquely reconfigurable lab designs allow researchers to unobtrusively study users as they interact with information technology, whether they're using the technology alone, in the vicinity of or in collaboration with others. Our labs afford a deeper understanding of complex digital transformation or user experience phenomena with highly rigorous and actionable results.

We want to thank the editors of the NeuroIS Magazine for the opportunity to present the MDTRC in this issue! We would like to invite you all to...

... visit the MDTRC website: <https://mdtrc.mcmaster.ca>

... take a virtual tour through the MDTRC:
<https://www.youtube.com/watch?v=YPgh93ZPAjg>

... get in touch with the lab management team via
mdtrc@mcmaster.ca

Experimental research situation at MDTRC





Brain-Computer Interface live demonstration (2010)

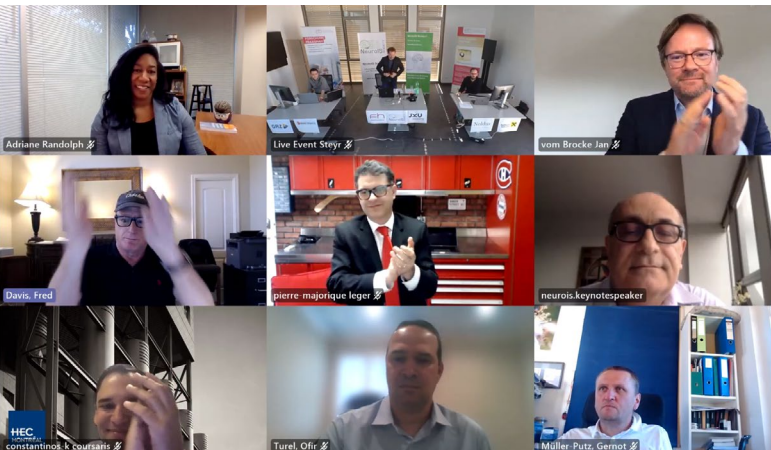


Honor of professor Davis for his scientific achievements by the governor of Upper Austria, Dr. Josef Pühringer (2015)

NeuroIS Retreat 2009 – 2023: 15th Anniversary

5,000 Days of Successful Development of a Research Community with High Impact

The NeuroIS Retreat is an annual event that brings together researchers, practitioners, and professionals from various disciplines to discuss the latest developments in NeuroIS. Attendees network and share their experiences and research findings. The retreats have been held annually since 2009, with the most recent one taking place in 2023. Thus, this year we celebrate the 15th anniversary of the NeuroIS Retreat. The inaugural retreat was held in the period September 22-24, 2009, in Gmunden, Austria. The most recent retreat takes place in the period May 30 – June¹, 2023, in Vienna. What follows is that there are exactly 5,000 days between the inaugural event and the 15th anniversary. The NeuroIS Society would like to take this opportunity to thank all participants, contributors, and sponsors for their ongoing support. The following pages document the development of the event based on the annual group photos and some other impressions. May the next 5,000 days or 15 years be just as successful!



In 2020 and 2021, due to the Corona crisis and resulting travel restrictions, the NeuroIS Retreat was held in a virtual format



Impression from the NeuroIS training course, a pre-event of the NeuroIS Retreat (2022)



Special guest at the NeuroIS Retreat, Barbara Prammer, former President of the National Council of Austria (2011)

2023 |

2009

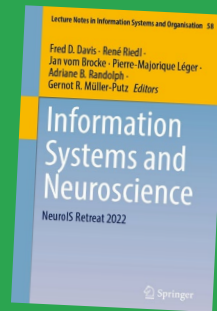


2010



NeuroIS Retreat Facts²

- 322 different attendees
- 313 scientific papers were presented
- 25 keynotes and hot topic talks were given
- Since 2012 each year a training course (tutorial) is held as a pre-retreat workshop
- Since 2015 the proceedings are published as Springer Lecture Notes, a milestone in the development of the conference
- Springer Link data indicates the impressive number of 240,000 accesses of the proceedings (April 2023); it follows that the research presented at the NeuroIS Retreat and published in the proceedings has significant impact



¹ The current issue was published in the course of the NeuroIS Retreat 2023, so the group photo from this year is not yet shown. A report on this retreat including a group picture will be available in the next issue of the NeuroIS Society Magazine.

² The “NeuroIS Retreat Facts” refer to the period 2009-2022.

2013



2016



2019



2020

NeuroIS Retreat 2020

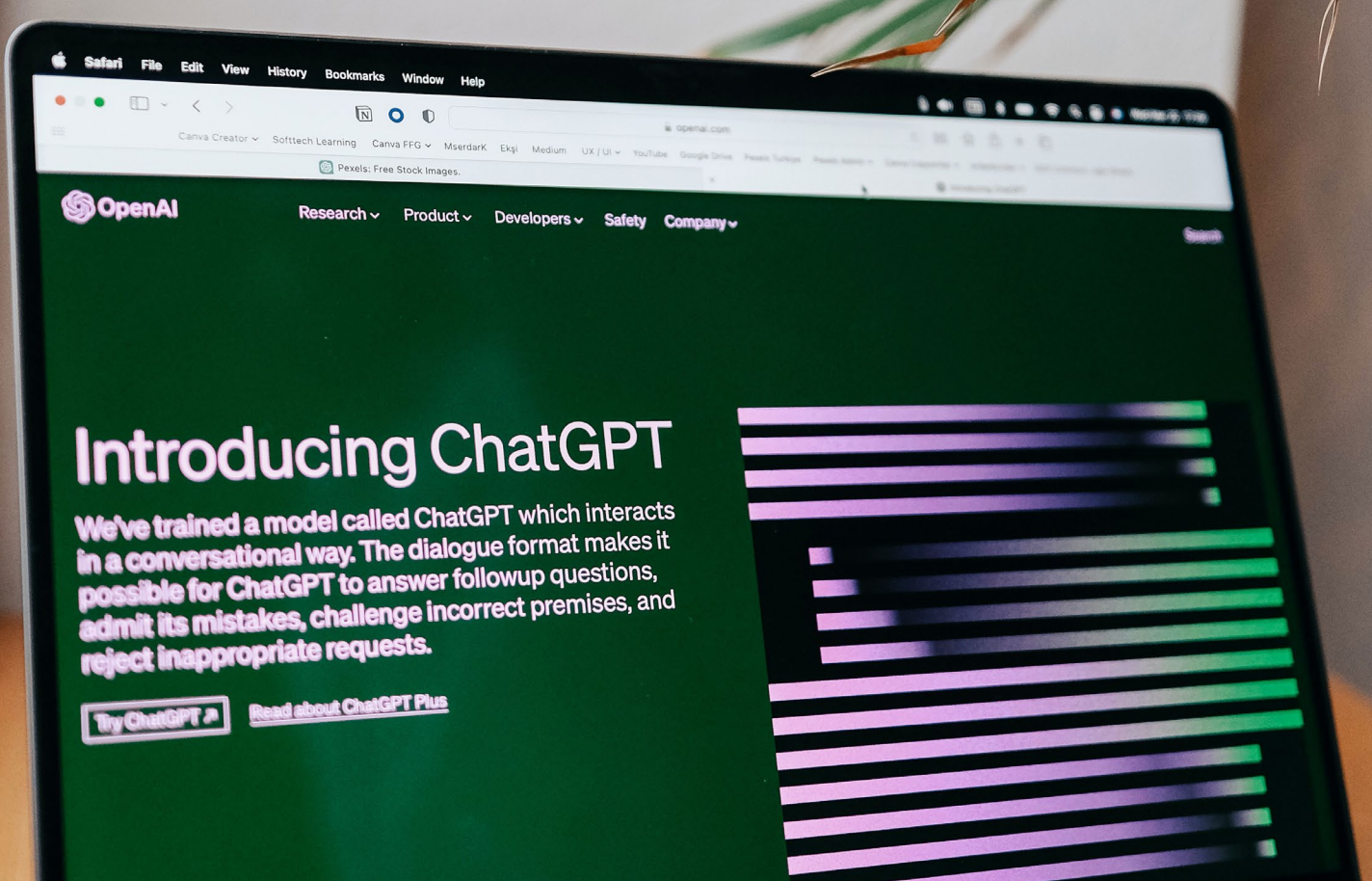
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NeuroIS RETREAT 
Virtual Conference 2021 www.NeuroIS.org





ChatGPT on NeuroIS

ChatGPT is an Artificial Intelligence (AI) chatbot developed by OpenAI, <https://chat.openai.com/>. ChatGPT was released in November 2022 and it garnered attention for its responses to questions across many domains of knowledge. ChatGPT uses Microsoft infrastructure.

In January 2023, Dr. René Riedl, scientific director of the NeuroIS Society, conducted an interview with ChatGPT on NeuroIS. Dr. Riedl's questions and ChatGPT's responses are indicated in the following (in verbatim).

How can information systems researchers benefit from the use of neurophysiological measurement tools?

Neurophysiological measurement tools, such as electroencephalography (EEG) and functional magnetic resonance imaging (fMRI), can help information systems researchers gain insight into how people interact with technology. For example, EEG can be used to measure a user's level of engagement or attention with technology, while fMRI can be used to measure the brain's response to different types of technology. These tools can provide researchers with a more detailed understanding of how technology impacts the brain and how different types of technology can be optimized to better meet user needs.

What is the current impact of NeuroIS research in the Information Systems (IS) discipline?

NeuroIS research is having an increasingly significant impact on the Information Systems (IS) discipline. NeuroIS combines neuroscience techniques and theories with IS research, allowing for a more comprehensive understanding of user behavior. This approach has been used to gain insights into how individuals interact with and use tech-

nology, how users make decisions, and how feelings and emotions affect user behavior. NeuroIS has been used to improve user experience and design for a variety of IT products, such as mobile applications and websites. NeuroIS has also played a role in the development of theories and models of user behavior, as well as in the study of the neurophysiological basis of IS use. NeuroIS research is helping to bridge the gap between IS research and neuroscience, and its influence will continue to grow in the years to come.

Please describe the scientific achievement of NeuroIS research since its genesis in 2007.

Since its genesis in 2007, NeuroIS research has made significant contributions to the field of information systems by offering new insights into how individuals interact with and use technology. NeuroIS research combines traditional IS research methods with neuroscience techniques such as eye tracking, electroencephalography (EEG), and functional magnetic resonance imaging (fMRI) to measure users' cognitive and affective responses to technology. The resulting insights have allowed researchers to better understand how individuals interact with and use technology, as well as the impact of technology on human performance, decision-making, and behavior. NeuroIS research has also enabled researchers to identify and quantify individual differences in user experience and behavior, which has led

to the development of personalized interventions and tailored user experiences. Overall, NeuroIS research has advanced our understanding of how individuals interact with and use technology, as well as the impact of technology on human performance, decision-making, and behavior.

Which method offers the most significant application potential for NeuroIS researchers?

Machine learning is the method that offers the most significant application potential for NeuroIS researchers. Machine learning algorithms can be used to analyze large datasets of neuroimaging data, such as EEG and fMRI, to identify patterns and correlations between brain activity and behavior. This could help NeuroIS researchers to further understand how the brain works and to develop new treatments for psychological and neurological disorders.

Why should researchers participate at the NeuroIS Retreat?

The NeuroIS Retreat is an excellent opportunity for researchers to network with other scholars, present their work, and discuss their research topics in an interdisciplinary setting. It is also an excellent opportunity to gain valuable feedback and advice from experts in the field, as well as to learn about the latest advancements in NeuroIS. Additionally, this event provides researchers with the chance to get a better understanding of the potential applications of NeuroIS in their own research.



The Practitioner's Perspective

An Interview with Hector Hughes



NeuroIS Society: Hector, you are the CEO of Get Unplugged Limited. Please describe your company.

Hector Hughes: Our company provides services in the domain of digital detoxing. We define this concept as a period of time when users of digital devices, such as smartphones and laptops, intentionally take a break from their devices.

NeuroIS Society: Why is it important to take breaks from the use of digital devices?

Hector Hughes: Digital devices and in particular social media apps are designed to be addictive, keeping us distracted and our brains busy. Unplugging from their devices can help users reconnect and refocus. In essence, we are convinced that the world, and everyone on it, would be happier and more productive if we dedicated time to going offline for at least a few days each year.

NeuroIS Society: What is the exact offer of your company?

Hector Hughes: Unplugging should be easy, accessible from city life. That is why we created Unplugged, to help the always-on, switch off. We decided to build beautiful off-grid cabins just outside of city life that take less than an hour or two to get to. Today we have several cabins close to London and Manchester. Guests check themselves in and are encouraged to lock their phones away to benefit from three nights offline.

NeuroIS Society: Some time ago Unplugged has started a collaboration with an international research team to scientifically examine the efficacy of digital detoxing. Please describe this research project.

Hector Hughes: The main research question of this project is: How can multi-day digital-detox experiences during holidays influence personal wellbeing? The researchers use a multi-method approach to determine wellbeing, including self-report and physiological data. Currently, the

researchers are analyzing the data and we expect results soon. However, based on the personal experiences of our guests we already know that the stress reduction potential of digital detoxing is enormous.

NeuroIS Society: On your website <https://unplugged.rest> you indicate that “3 nights is the optimal time to switch off”. Can you explain this “3 Day Effect” in more detail?

Hector Hughes: Sure. A study by North American psychologists found that after spending just three days surrounded by nature, our brains work better. Participants reported increased creativity, better problem-solving skills, and improved cognitive function. Importantly, this was not just by a little bit; rather, the study found a 50% increase in cognitive performance.

NeuroIS Society: This sounds interesting! Moreover, it is great to hear that you are supporting a field study of an international research team to reveal further insights, and the fact that a multi-method approach is used to determine wellbeing, including self-report and physiological data, substantiates the relevance of the NeuroIS research approach. The NeuroIS Society wishes you all the best for the future. Hopefully many people who are digitally stressed can benefit from your services.

Hector Hughes: Thanks!

Note: The interview was conducted by Dr. René Riedl, scientific director of the NeuroIS Society.

Unplugged helps people live happier lives by providing digital detoxes at off-grid cabins an hour from city life. Launched in 2020 they now have 17 cabins across the UK.



Young Academics

In each issue of the magazine, the NeuroIS Society presents a young and aspiring academic.

Mahdi Mirhoseini

John Molson School of Business
Concordia University (Canada)

Why did you start NeuroIS research?

I embarked on my journey into NeuroIS research with a strong passion for leveraging users' cognitive and emotional states to inform the design of IT artifacts. As such, pursuing a Ph.D. in Information Systems felt like a natural choice for me. NeuroIS presented an ideal framework to explore this research area, and my background in electrical engineering proved to be a valuable asset in working with neurophysiological signals. Overall, I was drawn to NeuroIS because of its potential to enhance the design and development of IT solutions by incorporating insights from neuroscience.

How did you start with NeuroIS?

I began exploring NeuroIS during my Ph.D. studies at HEC Montreal, where I was fortunate enough to have access to state-of-the-art lab space and equipment through the establishment of Tech3Lab. In my coursework, I experimented with eye-tracking and EEG and quickly became fascinated with the potential of these technologies to inform the design of IT artifacts. As I gained more experience in NeuroIS research, I worked on several projects that helped me hone my skills and even presented one of them at the Pre-ICIS workshop on Human-Computer Interaction in 2013 in Milan. Although there were only a handful of Ph.D. students worldwide conducting NeuroIS research at the time, I believed that the community would grow and eventually become established in the IS field.

What are challenges for young NeuroIS researchers?

In my view, young NeuroIS researchers face two primary challenges. The first is designing research projects that effectively bridge different disciplines and finding common ground

to communicate with scholars from diverse fields. While presenting our work to the NeuroIS community is relatively straightforward, communicating our findings to top IS journals can be more challenging. The second challenge is inherent to NeuroIS research itself, which requires access to specialized lab space, equipment, and funding. Compared to typical IS research, NeuroIS research can be more expensive and resource-intensive, which can pose a hurdle for young scholars with limited resources who must also meet tenure requirements. Overall, I believe that addressing these challenges requires creativity, persistence, and collaboration across different domains, as well as a willingness to seek out and leverage available resources.

What were the most important moments in your academic career?

One of the most important moments in my academic career occurred during the NeuroIS retreat in 2016 in Gmunden, where I presented my research and interacted with the NeuroIS community for the first time. I was struck by the quality and depth of the feedback I received, which has continued to shape my research to this day. I found the NeuroIS community to be incredibly friendly, supportive, and committed to providing constructive feedback. This experience was a defining moment for me, as it solidified my desire to be part of this community and motivated me to continue pursuing research in this exciting field.





Mahdi Mirhoseini presenting at the NeuroIS Retreat 2019



Mahdi Mirhoseini presenting at the NeuroIS Retreat 2022



Mahdi Mirhoseini with a study participant



Mahdi Mirhoseini at HEC Montréal, Dr. Sylvain Sénécal (left) and Dr. Pierre-Majorique Léger (right)

Looking Back

On this last page, we look back to a highlight in the history of NeuroIS.

First Best Reviewer Award Winner: Marc T. P. Adam



Handover of the first best reviewer award, NeuroIS Retreat 2018 (from left to right: Fred D. Davis, Marc T. P. Adam, René Riedl)



Marc T. P. Adam,
University of Newcastle, Australia

In the context of the 10 Years Anniversary of the NeuroIS Retreat in 2018, the best reviewer award was brought into being. This award is selected by the conference co-chairs, Dr. Fred D. Davis and Dr. René Riedl, based on the quality and comprehensiveness of the review(s). Marc T. P. Adam, Associate Professor in Computing and IT at the School of Information and Physical Sciences, University of Newcastle, Australia, is the first best reviewer award winner. Marc received an undergraduate degree in Computer Science from the University of Applied Sciences Würzburg, Germany, and a PhD in Information Systems from the Karlsruhe Institute of Technology, Germany. Dr. Adam's research is based on interdisciplinary collaborations with international scholars from Computing and Information Technology and related disciplines such as Business, Health Sciences, and Psychology.

Dr. Adam's teaching goal is to provide students with an inspiring learning environment that motivates to learn and in which students can see the potential business and health applications of computing and information technology in practice. Therefore,

he follows an applied IT approach by (i) interactively discussing concrete cases of how IT works in a business environment, (ii) letting students interact with business and health IT artifacts, and (iii) demonstrating how different business areas can benefit from the advances in IT. The topics of Dr. Adam's courses include big data analytics, human-centred computing, ICT business analysis, design of lab and field experiments, and statistical data analysis.

Dr. Adam co-authored several NeuroIS papers, some of which have been cited many times. Examples are:

Integrating biosignals into information systems: A NeuroIS tool for improving emotion regulation (2013). *Journal of Management Information Systems* 30(3), 247-278.

Design blueprint for stress-sensitive adaptive enterprise systems (2017). *Business & Information Systems Engineering* 59(4), 277-291.

Deep learning for human affect recognition: Insights and new developments (2021). *IEEE Transactions on Affective Computing* 12(2), 524-543.