

ELEC-E7851 COMPUTATIONAL USER INTERFACE DESIGN, Fall 2021

Aalto University

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General: This assignment sheet contains one task. It is graded from 0 to 5 assignment points.

Preparations: Rehearse the slides from Lecture 1 and read the associated reading, both provided in MyCourses > Materials. Secure a comfortable chair and a cup of coffee or tea.

Submission deadline is given in MyCourses. Please observe it.

A1 Familiarizing with Computational Interaction [0-5 points]

Learning goal: The learning goal is to *familiarize* with the main types of research in the area of computational interaction. Our secondary goal is to learn to read scientific papers in this area and communicate them to others.

Task: You should *review* **two** (2) scientific papers - each summary being worth max 2.5 points. You must use the criteria and template I provide below; they come close to a real (miniature-sized) peer review in this area.

Instructions:

1) Pick two papers from Proceedings of CHI that fall into two different *contribution types*. In the *Appendix* below, I have listed 50 papers related to computational interaction published at CHI, the flagship conference in the field of HCI. The list contains basic information about each paper that will help you pick the most interesting ones. However, you can also pick newer papers by using either ACM Digital Library (acm.org/dl) or Google Scholar. Pick two papers that 1) interest you and 2) that you think are different from each other: Try not to pick papers that you know your friends are picking.

Try to pick papers that represent two different *contribution types*:

- Method
- Theory and modelling
- Data set or analysis
- Empirical study, including replication studies
- Design
- Commentary or essay

2) Read the papers and keep track of the following criterion for scientific contributions in this area: "A scientific article in this area improves understanding on how to design interactive systems underpinned by computational principles of human-computer interaction. A well-written scientific article in this area 1) addresses a well-scoped phenomenon in human use of computers; 2) rigorously in-

troduces and argues for the chosen approach, including assumptions both about humans and the computational approach, as well as differences and similarities with previous work; 3) explicates the claimed contribution in terms of benefit or disadvantage to humans; 4) provides adequate evidence; and 5) offers a balanced discussion of the contribution, including generalisability and limitations. Critical viewpoints and negative findings are welcome. Even in algorithmic contributions, the human viewpoint is central and kept visible throughout." [This definition is given by the CHI conference.]

3) Write reviews for both papers. A review must answer the following questions, in this order, each expanded to 1-5 phrases:

1. **Basic data** about the paper: Title, authors, year, DOI link
2. **Motivation** for picking this paper: Why did you pick this paper? Example: "I picked the paper, because ... and ... "
3. **Contribution type**: What is the main type of knowledge contributed? You must refer to the types listed above (bullet list with 6 types) and pick one primary type. Example: "This paper is a Method contribution, because it ... However, it also contributes to Design, because it ..."
4. **Scope**: What is the phenomenon in human use of computers that the paper addresses? Why is that phenomenon important? Example: "This paper studies text entry with touchscreen devices, in particular addressing the problem that people face when typing on the go, where ..."
5. **Approach**: What is the approach proposed? Explain its main (technical) idea in your own words. Explain briefly: *Why* is it expected to work? Example: "The paper proposes a new algorithmic method for error correction that uses deep learning and ... The method works by ... The authors argue that it can improve accuracy of error correction by ... because ..."
6. **Evidence**: What evidence is provided for the method? Is that evidence credible? Example: "The paper presents evidence from simulation studies and a final study from a controlled study with 16 users, where they were asked to... The results show that ... While they do show ... , they lack ..and in my opinion are ..."
7. **Generalizability**: What do you think would be the 2 or 3 most critical obstacles to utilizing the result more broadly? Example: "The method was tested in limited circumstances where ... On the positive side, the method can be expected to work in conditions where .. On the negative side, I suspect that ..."
8. **Alternative applications**: The paper showed evidence collected in a particular setting (e.g., text entry). Can you come up with an *alternative*, even surprising (but yet realistic), application area? Example: "While the method was demonstrated in the area of interactive GUI design, I believe that there are exciting similarities to the problem of interior design, which could be exploited in future applications if.... In particular, ..."
9. **Learning outcome**: What did you learn that you did not know before? Example: "This was an exciting paper to read, because I have always wondered why ... I learned that ... "

You can add one figure and a free-form conclusion.

4) Export both reviews in one PDF file.

5) Submit to MyCourses > Assignments > Assignment 1 before the deadline.

Formatting: While there is no maximum length, an appropriate target is about 1 page per review (assuming 12 point font, single spacing, and one inch margins). You are not penalized for being longer than that, but you may be penalized for an overly verbose or redundant style. You can also use your own template, but in this case you must ensure that you answer the same questions as listed above.

Grading will be based on how comprehensive, understandable, accurate, and insightful your reviews are. Correct use of involved technical terminology is important. For example, avoid using "optimization" loosely. Ensure you understand what the terms introduced in the paper mean!

Reminder: Do not paste text from the papers, use your own expression.

APPENDIX: PAPERS ON COMPUTATIONAL HCI (CHI 2016-2017)

CHI 2017

Title: Modeling User Performance on Curved Constrained Paths

Authors: Mathieu Nancel and Edward Lank

Summary: The paper proposes an updated model of the steering law to accommodate irregular and arbitrarily long curved paths, validated using empirical testing.

DOI: <https://doi.org/10.1145/3025453.3025951>

Title: Toward Everyday Gaze Input: Accuracy and Precision of Eye Tracking and Implications for Design

Authors: Anna Maria Feit, Shane Williams, Arturo Toledo, Ann Paradiso, Harish Kulkarni, Shaun Kane, Meredith Ringel Morris

Summary: Describes the use of user data to derive models for determining appropriate target sizes for gaze tracking and optimizing the parameters of commonly used filters

DOI: <https://doi.org/10.1145/3025453.3025599>

Title: Is Difficulty Overrated?: The Effects of Choice, Novelty and Suspense on Intrinsic Motivation in Educational Games

Authors: J. Derek Lomas, Ken Koedinger, Nirmal Patel, Sharan Shodhan, Nikhil Poonwala, Jodi L. Forlizzi

Summary: The paper offers some early modeling of the effect of the intersection between difficulty and novelty, expanding and building on previous work modeling user engagement and the "inverted U".

DOI: <https://doi.org/10.1145/3025453.3025638>

Title: Toward Realistic Hands Gesture Interface: Keeping it Simple for Developers and Machines

Authors: Eyal Krupka, Kfir Karmon, Noam Bloom, Daniel Freedman, Ilya Gurvich, Aviv Hurvitz, Ido Leichter, Yoni Smolin, Yuval Tzairi, Alon Vinnikov, Aharon Bar-Hillel

Summary: Introduces a simple language for pose and gesture description and an algorithmic pipeline that recognizes gestures with high accuracy. Results indicate that the pipeline enables successful gesture recognition with a very low computational load

DOI: <https://doi.org/10.1145/3025453.3025508>

Title: A Cognitive Model of How People Make Decisions Through Interaction with Visual Displays

Authors: Xiuli Chen, Sandra Dorothee Starke, Chris Baber, Andrew Howes

Summary: The work proposes a model for human decision making based on textual and colour-based visual cues. The model can be dynamically updated based on prior inputs and is validated empirically.

DOI: <https://doi.org/10.1145/3025453.3025596>

Title: Inferring Cognitive Models from Data using Approximate Bayesian Computation

Authors: Antti Kangasrääsiö, Kumaripaba Athukorala, Andrew Howes, Jukka Corander, Samuel Kaski, Antti Oulasvirta

Summary: Reports on a new approach using Approximate Bayesian Computation (ABC) to support estimation of cognitive model parameters based on behavioural data. A case study is presented in which model parameters are estimated from click time data in a menu interaction task.

DOI: <https://doi.org/10.1145/3025453.3025576>

Title: Effects of Frequency Distribution on Linear Menu Performance

Authors: Wanyu Liu, Gilles Bailly, Andrew Howes

Summary: Examines the effect of the Zipfian distribution of menu item usage on selection performance. Highlights the fact that user behaviour is influenced by item and menu usage frequency and identifies several implications for menu design.

DOI: <https://doi.org/10.1145/3025453.3025707>

Title: ScreenGlint: Practical, In-situ Gaze Estimation on Smartphones

Authors: Michael Xuelin Huang, Jiajia Li, Grace Ngai, Hong Va Leong

Summary: Presents a novel approach which exploits the glint (reflection) of the screen on the user's cornea for gaze estimation, using only the image captured by the front-facing camera. The authors also developed an algorithm to enable this effective gaze tracking

DOI: <https://doi.org/10.1145/3025453.3025794>

Title: Modelling Learning of New Keyboard Layouts

Authors: Jussi P. P. Jokinen, Sayan Sarcar, Antti Oulasvirta, Chaklam Silpasuwanchai, Zhenxin Wang, Xiangshi Ren

Summary: Presents a predictive model of how users learn to locate keys for unfamiliar keyboard layouts. The model can be queried to predict search times and search patterns and ultimately to estimate typing performance.

DOI: <https://doi.org/10.1145/3025453.3025580>

Title: Looking Coordinated: Bidirectional Gaze Mechanisms for Collaborative Interaction with Virtual Characters

Authors: Sean Andrist, Michael Gleicher, Bilge Mutlu

Summary: Describes a model of bidirectional gaze (for use in collaborative scenarios) that enables interactive virtual characters to generate and interpret the user's gaze and to effectively communicate coordinated behaviors

DOI: <http://dx.doi.org/10.1145/3025453.3026033>

Title: GraphScape: A Model for Automated Reasoning about Visualization Similarity and Sequencing

Authors: Younghoon Kim, Kanit Wongsuphasawat, Jessica Hullman, Jeffrey Heer

Summary: Presents a directed graph model of the visualization design space and a corresponding cost function for ranking visualization sequences.

DOI: <https://doi.org/10.1145/3025453.3025866>

Title: Leveraging Human Routine Models to Detect and Generate Human Behaviors

Authors: Nikola Banovic, Anqi Wang, Yanfeng Jin, Christie Chang, Julian Ramos, Anind Dey, Jennifer Mankoff

Summary: Demonstrates an approach for automatically detecting and generating behaviours indicative of certain characteristic routines, e.g. aggressive driving. Weakly labeled instances are used to train a classifier that can detect negative driver behaviours and trigger interventions.

DOI: <https://doi.org/10.1145/3025453.3025571>

Title: SEER: Auto-Generating Information Extraction Rules from User-Specified Examples

Authors: Maeda F. Hanafi, Azza Abouzied, Laura Chiticariu, Yunyao Li

Summary: Introduces an approach to augment the user's ability to undertake Information Extraction (IE) by facilitating the process of building rules. The system automates the process of rule generation from a small number of user-specified examples.

DOI: <https://doi.org/10.1145/3025453.3025540>

Title: Modeling Sub-Document Attention Using Viewport Time

Authors: Max Grusky, Jeiran Jahani, Josh Schwartz, Dan Valente, Yoav Artzi, Mor Naaman

Summary: Demonstrates an approach to modeling user engagement based on how long certain page components are visible in the display.

DOI: <https://doi.org/10.1145/3025453.3025916>

Title: PFIS-V: Modeling Foraging Behavior in the Presence of Variants

Authors: Sruti Srinivasa Ragavan, Bhargav Pandya, David Piorkowski, Charles Hill, Sandeep Kaur Kuttal, Anita Sarma, Margaret Burnett

Summary: Introduces a new model for predicting foraging behaviour in cases where the target artifact is one of many similar variants.

DOI: <https://doi.org/10.1145/3025453.3025818>

Title: BIGnav: Bayesian Information Gain for Guiding Multiscale Navigation

Authors: Wanyu Liu, Rafael Lucas D'Oliveira, Michel Beaudouin-Lafon, Olivier Rioul

Summary: Exploits techniques from Bayesian Experimental Design to enhance the user's ability to navigate multiscale information, e.g. maps. The system exploits prior user input to estimate the information gain associated with certain navigation actions.

DOI: <https://doi.org/10.1145/3025453.3025524>

Title: How Busy Are You?: Predicting the Interruptibility Intensity of Mobile Users

Authors: Fengpeng Yuan, Xianyi Gao, Janne Lindqvist

Summary: Presents a interruptibility prediction model based on mobile phone data and incorporating knowledge of the user's broadly categorized personality.

DOI: <https://doi.org/10.1145/3025453.3025946>

Title: ProbUI: Generalising Touch Target Representations to Enable Declarative Gesture Definition for Probabilistic GUIs

Authors: Daniel Buschek, Florian Alt

Summary: Introduces a GUI framework based on accommodating uncertainty in user touch input. Highlights that simple bounding boxes do not accurately capture intended user interaction and proposes an alternative probabilistic approach.

DOI: <https://doi.org/10.1145/3025453.3025502>

Title: Quantifying Aversion to Costly Typing Errors in Expert Mobile Text Entry

Authors: Nikola Banovic, Varun Rao, Abinaya Saravanan, Anind K. Dey, Jennifer Mankoff

Summary: Presents a model for predicting how typing speed is influenced by user's aversion to typing errors. Authors highlight that not modeling the speed reduction strategy employed by real users to avoid typing errors results in overly optimistic typing performance estimates.

DOI: <https://doi.org/10.1145/3025453.3025695>

Title: Synthesizing Stroke Gestures Across User Populations: A Case for Users with Visual Impairments

Authors: Luis A. Leiva, Daniel Martín-Albo, Radu-Daniel Vatavu

Summary: Exploits Kinematic Theory to model human movement and synthesize stroke gestures with perturbations introduced to simulate visually impaired user performance.

DOI: <https://doi.org/10.1145/3025453.3025906>

Title: Robust Gaze Features for Enabling Language Proficiency Awareness

Authors: Jakob Karolus, Paweł W. Wozniak, Lewis L. Chuang, Albrecht Schmidt

Summary: Demonstrates an interface that can detect language proficiency based on gaze features and proposes several guidelines for designing interfaces that incorporate language proficiency awareness.

DOI: <https://doi.org/10.1145/3025453.3025601>

Title: A Predictive Model of Emergency Physician Task Resumption Following Interruptions

Authors: Allan Fong, A. Zachary Hettinger, Raj M. Ratwani

Summary: Presents a model for predicting task resumption among emergency physicians based on a variety of workload data. Highlights the value of such a model to improve health service provision.

DOI: <https://doi.org/10.1145/3025453.3025700>

Title: Sensing and Handling Engagement Dynamics in Human-Robot Interaction Involving Peripheral Computing Devices

Authors: Mingfei Sun, Zhenjie Zhao, Xiaojuan Ma

Summary: Presents an engagement inference model for human-robot interaction, encouraging two engagement strategies---explicit and implicit---to attract user attention and prevent uncoupling.

DOI: <https://doi.org/10.1145/3025453.3025469>

Title: What Can Be Predicted from Six Seconds of Driver Glances?

Authors: Lex Fridman, Heishiro Toyoda, Sean Seaman, Bobbie Seppelt, Linda Angell, Joonbum Lee, Bruce Mehler, Bryan Reimer

Summary: Describes classification of “micro-glances” and “macro-glances” using a hidden Markov model to infer information about the driver, car, and environment.

DOI: <https://doi.org/10.1145/3025453.3025929>

Title: COMPASS: Rotational Keyboard on Non-Touch Smartwatches

Authors: Xin Yi, Chun Yu, Weijie Xu, Xiaojun Bi, Yuanchun Shi

Summary: Describes a text entry method for non-touch smartwatches that automatically adapts and optimizes for the entered input using circular keyboard layout and Bayesian language model.

DOI: <https://doi.org/10.1145/3025453.3025454>

CHI 2016

Title: Interacting with Predictions: Visual Inspection of Black-box Machine Learning Models

Authors: Josua Krause, Adam Perer, Kenney Ng

Summary: This work discusses a tool, *Prospector*, which allows inspection and assessment of predictive models and how particular attributes affect an individual forecast. The tool is accompanied by a case study demonstrating usage in the context of predictive modeling of diabetes based on medical record data.

DOI: <https://doi.org/10.1145/2858036.2858529>

Title: Designing Engaging Games Using Bayesian Optimization

Authors: Mohammad M. Khajah, Brett D. Roads, Robert V. Lindsey, Yun-En Liu, Michael C. Mozer

Summary: The paper demonstrates the use of Bayesian optimisation to adjust the difficulty of games, with a view to maximise engagement. The work further explores how overt and covert manipulations affected engagement, and touches on how this approach could be used to optimise both cohorts or individual user experience.

DOI: <https://doi.org/10.1145/2858036.2858253>

Title: Airways: Optimization-Based Planning of Quadrotor Trajectories according to High-Level User Goals

Authors: Christoph Gebhardt, Benjamin Hepp, Tobias Nageli, Stefan Stevšić, Otmar Hilliges

Summary: Presents a computational design tool that allows end-users to create advanced quadrotor trajectories with a variety of application scenarios in mind. Authors demonstrated the flexibility/utility of the approach in three use cases: aerial videography, light painting and racing.

DOI: <http://dx.doi.org/10.1145/2858036.2858353>

Title: Spatio-Temporal Modeling and Prediction of Visual Attention in Graphical User Interfaces

Authors: Pingmei Xu, Yusuke Sugano, Andreas Bulling

Summary: Presents a computational model to predict users' spatiotemporal visual attention on WIMP-style graphical user interfaces. Through an experiment, the authors show that the model predicts attention maps more accurately than current methods.

DOI: <http://dx.doi.org/10.1145/2858036.2858479>

Title: DefSense: Computational Design of Customized Deformable Input Devices

Authors: Moritz Bäcker, Benjamin Hepp, Fabrizio Pece, Paul G. Kry, Bernd Bickel, Bernhard Thomaszewski, Otmar Hilliges

Summary: Presents a novel optimization-based computational design algorithm for the design and fabrication of customized, deformable input devices, capable of continuously sensing their deformation.

DOI: <http://dx.doi.org/10.1145/2858036.2858354>

Title: Modeling and Understanding Human Routine Behavior

Authors: Nikola Banovic, Tofi Buzali, Fanny Chevalier, Jennifer Mankoff, Anind K. Dey

Summary: Presents an investigation into how an existing activity prediction algorithm can be used to model causal relationships in routines in human behaviour. The algorithm is applied to two example datasets, and the paper shows that modeled routines are meaningful and predictive of people's actions.

DOI: <http://dx.doi.org/10.1145/2858036.2858557>

Title: Data-driven Personas: Constructing Archetypal Users with Clickstreams and User Telemetry

Authors: Xiang Zhang, Hans-Frederick Brown, Anil Shankar

Summary: This work takes a data driven approach to developing representative user personas, using click-stream data which is processed into a number of workflows, further coalesced into a number of personas. These personas can be kept current and are updated using the continuous stream of telemetry data and a mixed models approach.

DOI: <https://doi.org/10.1145/2858036.2858523>

Title: Modelling Error Rates in Temporal Pointing

Authors: Byungjoo Lee, Antti Oulasvirta

Summary: Presents a novel mathematical model for understanding error rates in temporal pointing. Tested in two experiments, the authors claim that the model can explain previous findings showing that touchscreens are worse in temporal pointing than physical input devices.

DOI: <http://dx.doi.org/10.1145/2858036.2858143>

Title: Building a Personalized, Auto-Calibrating Eye Tracker from User Interactions

Authors: Michael Xuelin Huang, Tiffany C.K. Kwok, Grace Ngai, Stephen C.F. Chan, Hong Va Leong

Summary: Combines mouse tracking data with eye-tracking data to train and refine a personalised eye-tracking model.

DOI: <https://doi.org/10.1145/2858036.2858404>

Title: UX Heatmaps: Mapping User Experience on Visual Interfaces

Authors: Vanessa Georges, François Courtemanche, Sylvain Senecal, Thierry Baccino, Marc Fretette, Pierre-Majorique Leger

Summary: Discusses an off-the-shelf UX evaluation tool in the context of detecting users' emotional and cognitive state, for the purpose of mapping and refining the user experience.

DOI: <https://doi.org/10.1145/2858036.2858271>

Title: Finding Significant Stress Episodes in a Discontinuous Time Series of Rapidly Varying Mobile Sensor Data

Authors: Hillol Sarker, Matthew Tyburski, Md Mahbubur Rahman, Karen Hovsepian, Moushumi Sharmin, David H. Epstein, Kenzie L. Preston, C. Debra Furr-Holden, Adam Milam, Inbal Nahum-Shani, Mustafa al'Absi, Santosh Kumar

Summary: Develops a personalised model to predict stress episodes based on mobile sensor data carried by opioid-dependant drug users. The work proposes that these predictors could be used to instigate appropriate just-in-time interventions.

DOI: <https://doi.org/10.1145/2858036.2858218>

Title: Using Crowd Sourcing to Measure the Effects of System Response Delays on User Engagement

Authors: Brandon Taylor, Anind K. Dey, Daniel Siewiorek, Asim Smailagic

Summary: The work considers the effect of network delays on user engagement, and outlines models that use financial incentives to minimise user attrition in crowdsourced environments.

DOI: <https://doi.org/10.1145/2858036.2858572>

Title: Generating Personalized Spatial Analogies for Distances and Areas

Authors: Yea-Seul Kim, Jessica Hullman, Maneesh Agrawala

Summary: Describes a system that using an article and user current position (coordinates) as an input automatically generates personalized spatial analogies based on landmarks (locations) with which user can be familiar with (i.e. close to user's position or preselected, familiar place) that poses a similar spatial distance.

DOI: <https://doi.org/10.1145/2858036.2858440>

Title: One-Dimensional Handwriting: Inputting Letters and Words on Smart Glasses

Authors: Chun Yu, Ke Sun, Mingyuan Zhong, Xincheng Li, Peijun Zhao, Yuanchun Shi

Summary: Uses probabilistic algorithm and language model for 1D gestures recognition for classification of text input including both words and letters.

DOI: <https://doi.org/10.1145/2858036.2858542>

Title: Interface Design Optimization as a Multi-Armed Bandit Problem

Authors: J. Derek Lomas, Jodi Forlizzi, Nikhil Poonwala, Nirmal Patel, Sharan Shodhan, Kishan Patel, Ken Koedinger, Emma Brunskill

Summary: Discusses developing automated design optimisation strategies. In particular considering the importance of randomisation in covering a broad design space, avoiding premature optimisation, and human interaction in optimising for the "right" outcome.

DOI: <https://doi.org/10.1145/2858036.2858425>

Title: Fitts' Law and the Effects of Input Mapping and Stiffness on Flexible Display Interactions

Authors: Jesse Burstyn, Juan Pablo Carrascal, Roel Vertegaal

Summary: The work evaluates Fitts' law in the context of deformable display technologies and models Fitts' law tasks under various deformations.

DOI: <https://doi.org/10.1145/2858036.2858383>

Title: Machine Learning of Personal Gesture Variation in Music Conducting

Authors: Alvaro Sarasua, Baptiste Caramiaux, Atsu Tanaka

Summary: A machine-learning based approach to gesture recognition, in the context of music conducting. The system generates a personalised model to account for personal idiosyncrasies of the conductor.

DOI: <https://doi.org/10.1145/2858036.2858328>

Title: Dynamic Stereoscopic 3D Parameter Adjustment for Enhanced Depth Discrimination

Authors: Arun Kulshreshtha, Joseph J. LaViola, Jr.

Summary: Describes two algorithms that are automatically adjusting two cardinal 3D stereo parameters i.e. separation and convergence using data from eye tracking and scene's depth map.

DOI: <https://doi.org/10.1145/2858036.2858078>

Title: Alloy: Clustering with Crowds and Computation

Authors: Joseph Chee Chang, Aniket Kittur, Nathan Hahn

Summary: Describes a hybrid approach to labeling and machine learning using crowdsourcing. Human labeling is used to help train the model, followed by a "cast and gather" approach to refine the classifications.

DOI: <https://doi.org/10.1145/2858036.2858411>

Title: SelPh: Progressive Learning and Support of Manual Photo Color Enhancement

Authors: Yuki Koyama, Daisuke Sakamoto, Takeo Igarashi

Summary: Details a learning mechanism to model user preferences for colour correction in photo-editing software. The algorithm described is a self-reinforcing system and continually improves based on the user's own image enhancements.

DOI: <https://doi.org/10.1145/2858036.2858111>

Title: Unsupervised Clickstream Clustering for User Behavior Analysis

Authors: Gang Wang, Xinyi Zhang, Shiliang Tang, Haitao Zheng, Ben Y. Zhao

Summary: Describes unsupervised clickstream clustering method that uses similarity graph to find and visualise prevailing users behaviour.

DOI: <https://doi.org/10.1145/2858036.2858107>

Title: Accounting for Taste: Ranking Curators and Content in Social Networks

Authors: Haizi Yu, Biplab Deka, Jerry O. Talton, Ranjitha Kumar

Summary: Models content curators tastes, activity, and timeliness to engage and connect users of social media.

DOI: <https://doi.org/10.1145/2858036.2858219>

Title: Annexing Reality: Enabling Opportunistic Use of Everyday Objects as Tangible Proxies in Augmented Reality

Authors: Anuruddha Hettiarachchi, Daniel Wigdor

Summary: Opportunistically overlaying virtual models on real real-world objects simulate expected haptic feedback for user interactions.

DOI: <https://doi.org/10.1145/2858036.2858134>

Title: Evaluating the Influence of Targets and Hand Postures on Touch-based Behavioural Biometrics

Authors: Daniel Buschek, Alexander De Luca, Florian Alt

Summary: Models and predicts mobile touch targeting behaviour. These models are developed with a view to favour interfaces which provide consistent touch characteristics and optimise for prolific interactions.

DOI: <https://doi.org/10.1145/2858036.2858165>

Title: Modeling the Steering Time Difference between Narrowing and Widening Tunnels

Authors: Shota Yamanaka, Homei Miyashita

Summary: Models time differences for widening and narrowing tunnel paths, and predicts time differences to a high degree of accuracy from limited data points.

DOI: <https://doi.org/10.1145/2858036.2858037>
