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平成28年度 生体医歯工学共同研究実施報告書

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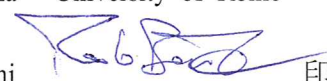
生体医歯工学共同研究拠点 研究所長会議 議長 殿

共同研究代表者

所属機関 Department of Computer Science,  
Sapienza - University of Rome

職名 Professor

氏名 Paolo Bottoni



印

勤務先所在地 295 Viale Regina Elena,  
Rome 00161, Italy

電話番号 +39 06 4925 5166

FAX番号

E-mailアドレス bottoni@di.uniroma1.it

下記により、共同研究の実施報告を致します。

記

研究題目	(和)バイオメトリクス統合された双方向システムの開発フレームワーク (英) A framework for the development of interactive systems with integrated biometrics		
研究領域	1. 生体材料に関する基礎・応用研究 2. 生体工学に関する基礎・応用研究 3. 生体機能分子に関する基礎・応用研究 ④. 化学・電気・機械・材料工学の生体応用研究		
研究期間	平成 28年 6月 1日～平成 29年 3月 31日		
研究組織			
氏名	所属機関・部局等	職名	役割分担
Paolo Bottoni	Department of Computer Science, Sapienza University of Rome, Italy	Associate Professor	Leader
Francesco Parisi Presicce	Department of Computer Science, Sapienza University of Rome, Italy	Professor	Participant
Michael Cohen	School of Computer Science and Engineering, The University of Aizu, Japan	Professor	Participant
Shigaku Tei	School of Computer Science and Engineering, The University of Aizu, Japan	Professor	Participant
Roumen Nikolov	State University of Library Studies and Information Technologies, Bulgaria	Professor	Participant
Nikolay Mirenkov	School of Computer Science and Engineering, The University of Aizu, Japan	Professor Emeritus	Participant
Maria De Marsico	Department of Computer Science, Sapienza University of Rome, Italy	Associate Professor	Participant
Emanuele Panizzi	Department of Computer Science, Sapienza University of Rome, Italy	Associate Professor	Participant

Roberto Navigli	Department of Computer Science, Sapienza University of Rome, Italy	Associate Professor	Participant
Matilde Mastrangelo	Institute of Oriental Studies, Sapienza University of Rome, Italy	Associate Professor	Participant
Pavel Boychev	Faculty of Mathematics and Informatics, Sofia University, Bulgaria	Associate Professor	Participant
Evguenia Kovacheva	Faculty of Mathematics and Informatics, Sofia University, Bulgaria	Assistant Professor	Participant
Oleg Monakhov	Inst. of Comp. Math. and Mathematical Geophysics, Russian Academy of Sciences, Siberian Branch, Russia	Principal Scientist	Participant
Tsukasa Ebihara	Green Company, Japan	President	Participant
Rentaro Yoshioka	School of Computer Science and Engineering, The University of Aizu, Japan	Associate Professor	Participant
Yutaka Watanobe	School of Computer Science and Engineering, The University of Aizu, Japan	Associate Professor	Participant
Volodymyr Gnatyuk	V.E. Lashkaryov Institute of Semiconductor Physics, National Academy of Sciences of Ukraine	Associate Professor	Participant
Danilo Avola	Department of Computer Science, Sapienza University of Rome, Italy	Grant Holder	Participant
Boyan Jekov	State University of Library Studies and Information Technologies, Bulgaria	Ph.D. Student	Participant
Feredico Gelsomini	Graduate School of Science and Technology, Shizuoka University, Japan	Ph.D. Student	Participant
Alessio Mecca	Department of Computer Science, Sapienza University of Rome, Italy	Ph.D. Student	Participant
Toru Aoki	Graduate School of Informatics, Shizuoka University, Japan	Professor	Participant
Kamen Kanev	Graduate School of Informatics, Shizuoka University, Japan	Professor	Participant
Hidenori Mimura	Research Institute of Electronics, Shizuoka University, Japan	Professor	Participant

### 所要経費

旅費総額	研究・会議費総額	消耗品費総額	
140,000 円	0 円	60,156 円	
<b>生体医歯工学共同研究拠点内対応教員</b>	(共同研究をした教員名を記載) Paolo Bottoni, Kamen Kanev, Hidenori Mimura		
<b>共同研究継続の希望について</b>	○ 有 ・ 無	平成29年度研究費総額(千円)	200
		※継続を希望される場合記入してください	

### 研究成果

Within the scope of this project we have focused on the use of annotations to characterize the reliability of authentication methods based on biometry, to be related to the security levels required by different applications. With respect to this we have proposed an alternative notion of typing, considering type information as annotations on the element to be typed, to allow flexible management of typing, naturally supporting multiple typing and reclassification of elements, thus

<p>enabling dynamic evolution of applications. More specifically we have studied the use of augmented and virtual reality objects as beacons to foster cooperation by attracting users towards specific locations and have initiated a series of experiments with respect to this.</p> <p>Concrete implementations and case studies have been conducted with motion analysis systems employing smartphones from two different perspectives: gesture recognition based on tracking of intentional hand motions and gait recognition based on continuous body monitoring. With respect to this we have also worked on the design of interfaces for personalized configurations in a wide range of environmental settings and in various contexts e.g. at home, at work, and in public places.</p>	
<p><b>使用した設備・資料・試料等</b></p>	<p>Research equipment available in the labs of Prof.Kanev and Prof.Bottoni (computing systems, interactive tabletops, and specialized optical readers for code extraction and analysis).</p>
<p><b>本研究成果に関連する論文発表状況</b></p>	
<p>(1) <u>P. Bottoni</u>, A. Fish, <u>F. Parisi Presicce</u>, “Type Annotation for Adaptive Systems”, <i>Proc. GaM 2016</i>, CoRR abs/1612.01637, 2016</p> <p>(2) <u>F. Gelsomini</u>, <u>K. Kanev</u>, <u>P. Bottoni</u>, “Improving Student Collaboration in Dynamic Group Environment Language Learning Through Digitally Enhanced Physical Objects, presentation at <i>HC 2016</i></p> <p>(3) <u>M. De Marsico</u>, D. De Pasquale, <u>A. Mecca</u>, “Embedded Accelerometer Signal Normalization for Cross-Device Gait Recognition. <i>Proc. BIOSIG 2016</i>, pp. 1-5, 2016</p> <p>(4) <u>K. Kanev</u>, <u>M. De Marsico</u>, <u>P. Bottoni</u>, <u>A. Mecca</u>, “Mobiles and Wearables: Owner Biometrics and Authentication”, <i>Proc. AVI 2016</i>, pp.: 318-319, 2016</p> <p>(5) R. Barneva, <u>K. Kanev</u>, P. Hung, <u>M. De Marsico</u>, <u>P. Bottoni</u> “Motion Tracking for Improved Activity Planning in Sports”, presentation at <i>HC 2016</i>.</p> <p>(6) <u>P. Bottoni</u>, <u>K. Kanev</u>, <u>A. Mei</u>, M. Pedone, “Interface and Security Firmware Enhancements of Mobile Communication Appliances”, presentation at <i>HC 2016</i>.</p>	