AMBIIENT proposal update

Subsection numbering: use A, B, C, D, … (following BAA) instead of 1, 2, 3, 4, … Use A.1.1, etc.

**G. Results and Technology Transfer**

We have demonstrated successful technology transfer to industry on various projects in the past. UF Office of Technology Licensing has been very active in helping faculty patent the technologies and identify industry partners to license and commercialize the technologies. Dr. Lin’s group produced several patents on wireless power and wireless sensor that have already been licensed. The technology transfer of wireless charging technologies to WiPower resulted in a successful acquisition by Qualcomm. Dr. Yoon’s group … (YK please add example). Dr. Li’s group has full support from the TTU Office of Research Commercialization on technology transfer. Several IPs developed by Dr. Li’s group on biomedical radar sensors are licensed to startup company yearONE, LLC.… (Changzhi please briefly describe TTU technology transfer and add example)

This project based on innovative biomimetic concept is expected to generate intellectual properties (IP) on sensor design, microfabrication process, and circuit design that can be patented and licensed to companies interested in commercialization. The team will work with their universities on patent application and technology transfer as soon as any new IP is generated.

**H. Ongoing Research**

(Comparison with other ongoing research indicating advantages and disadvantages of the proposed effort.) It seems to me that this section is to compare with others state-of-the-art approaches.

**I. Proposer Accomplishments**

(Discussion of proposer’s previous accomplishments and work in closely related research areas. In this section, also include any ongoing research projects or pending proposal activity that technically overlaps with the proposed effort, including funding source, administrative point of contact, and the program management plan for combining and de-conflicting the efforts.)

Drs. Lin, Li, and Casanova were involved in a previous DARPA project for detection and inversion of MEG/EEG signals. They have worked on all phases, from sensor design to circuit design to inversion algorithm. Additionally, Drs. Lin and Li have collaborated extensively on vital sign radar, and Dr. Casanova has worked on electromagnetic sensors for agriculture and analytical chemistry. Dr. Yoon has conducted research on microfabrication of MEMS-based sensor systems using piezoelectric and magnetic materials. (YK please update)

**J. Facilities**

UF and TTU have adequate facilities to carry out the proposed research tasks. (your write-up follows, with updates from YK and Changzhi)

**K. Teaming**

The project team consists of Dr. Jenshan Lin, Dr. Joaquin Casanova, and Dr. Yong-Kyu (YK) Yoon from University of Florida, and Dr. Changzhi Li from Texas Tech University. While working on the previous DARPA project, Dr. Lin teamed up with his former Ph.D. students Dr. Casanova and Dr. Li to work on the design of room-temperature MEG sensors and circuits for unshielded operation as well as the inversion algorithm for signal processing. Toward the end of the project, an idea of this proposed biomimetic sensor emerged as a promising candidate to significantly improve the sensitivity in unshielded environment while significantly reducing the size. The new concept requires microfabrication using thin-film magnetic materials and piezoelectric materials, and therefore Dr. Lin invited his colleague Dr. Yoon, an expert on this specific microfabrication process, to join the team. Dr. Lin and Dr. Yoon have been serving on each other’s Ph.D. student committees very often, and are familiar with each other’s technical expertise.

In this project, Dr. Lin will serve as the PI managing the project. Dr. Lin is currently serving as a program director of Communications, Circuits, and Sensing Systems in National Science Foundation. His two-year appointment is scheduled to end on 10/18/2018. While at NSF, he is allowed to spend about 20% his time on university research projects (but no salary support on government-funded projects per NSF rule). Dr. Lin is planning to dedicate 10% effort on this proposed project in the first 12 months, end his NSF appointment earlier to return to his university position on 10/1/2018, and switch to 15% effort on this project during academic semesters and 33% effort during summer. The project management during the first 12 months is not a problem, as in the pervious DARPA project he also served as the PI and Dr. Casanova handled all technical matters while he was away at NSF. The same arrangement is expected to work, and therefore Dr. Lin and Dr. Casanova are both listed as Technical Point of Contact.

With the experience on a relevant project as well as past working relationships and complementary expertise areas among members, the team is well suited to execute this project. Details of the expertise and task assignment of each team member are listed below.

(not listed under UF and TTU separately, making it a more coherent team)

Dr. Jenshan Lin: Project Lead overseeing all tasks on this project and co-supervise a graduate student and an undergraduate student with Dr. Casanova. 10% (0% in budget) 10/1/2017-9/30/2018, 15% academic months and 33% summer months starting 10/1/2018. He received Ph.D. in Electrical Engineering from UCLA in 1994, and worked for Bell Labs (under AT&T and Lucent) and its spinoff Agere Systems 1994-2013. He has been a faculty in University of Florida since 2003, and is currently a Full Professor. He is a Fellow of IEEE, and is an expert on RFIC, wireless sensors, and wireless power transfer. He has over 260 technical publications in refereed journals and conference proceedings, and holds 15 patents. Since joining University of Florida, he has graduated 24 Ph.D. students.

Dr. Joaquin Casanova: (similar format)

Dr. Yong-Kyu (YK) Yoon: (similar format)

Dr. Changzhi Li: (similar format) will design the electronics for amplifying and digitizing the signals from the sensor head, working with Dr. Casanova to determine circuit requirements. His time commitment is 15% academic year and 1 summer month. He received the B.S. degree in electrical engineering from Zhejiang University, China, in 2004 and the Ph.D. degree in electrical engineering from the University of Florida, Gainesville, FL, in 2009. In the summers of 2007 and 2008, he worked at Alereon Inc., Austin, TX, on ultrawideband (UWB) transceiver. In the summer of 2009, he worked at Coherent Logix Inc., Austin, TX, on software-defined radio. He was a consultant for DIS Semiconductor in Austin, TX in the summer of 2012. He was a consultant for Texas Instruments (TI) teaching TI employees “Design & Analysis of Analog ICs in LBC7 Process” in the summer of 2013. His research interests include analog circuits, microwave circuits, and biomedical applications of microwave/RF. He has published over 200 journal and conference papers in these fields. He holds 6 US patents.

(Organization Chart?)