

## **[Job opportunities] A Senior Researcher (Post-Doc) Position**

**[Job Title]** Senior Researcher (Post-doctoral fellow).

The employee could be promoted to project assistant professor depending on the evaluation of his/her performance etc.

**[Number of positions]** 1 position

**[Starting date]** As soon as possible

**[Application deadline]** July 31 2017 (close while filled)

### **[Description of the projects]**

Research and development on automated driving systems (ADS) of automobiles have been conducted enthusiastically all over the world. Human drivers are expected to fallback the driving control when the ADS requests it in SAE driving automation level 2 and 3 etc., then, many research studies on safe and smooth control transfer from ADS to human have been conducted recently, there are, however, many concerns from human factors viewpoint. Human robotics laboratory conducts research studies to seek out ideal forms of automated driving that is easy to use for humans, without being limited by the existing automated driving level.

This project aims to promote their mutual understanding by introducing "shared authority mode", where a human driver and ADSs share a single control operation with the haptic shared control as a basic technology, leading to realization of highly automated systems that is easy to use for humans. In addition, the project also challenges theoretical understanding comfort in vehicle motion and its application to vehicle control method toward comfortable automated driving technology.

### **[Job details]**

The employed researcher is expected to conduct research on topics described above and publish the results as journal papers as well as international conference.

Examples of research themes include, but not limited to

- Modeling human machine systems and its application to operator assistance method toward cooperative automated driving systems,
- Analysis and design of human-machine systems in shared/cooperative control, and
- Comfortable vehicle motion control based on human sensory dynamics.

### **[Expected skills, interests, and backgrounds]**

- Good mathematical background.
- English communication skill for daily discussion and writing papers.

- Programming skills in C, Matlab, Python or others for data analysis, numerical analysis and develop control systems in driving simulator etc.

**[Work location]**

Human Robotics Laboratory, College of Information Science and Engineering, Ritsumeikan University (1-1-1 Noji-higashi, Kusatsu, Shiga, Japan)  
<http://hr.ci.ritsumei.ac.jp/?lang=en>

**[Conditions]**

270,000 to 380,000 JPY/month (determined based on the employee's capability and contribution).

Other conditions are decided by appointment contract.

The contract will expire at the end of March every year. The contract can be extended by one year if both sides agree up to four times.

Details are available in the followings:

[http://www.ritsumei.ac.jp/research/member/researcher\\_appointment/ra02/file/yukisyokuin\\_syugyokisoku\\_english.pdf](http://www.ritsumei.ac.jp/research/member/researcher_appointment/ra02/file/yukisyokuin_syugyokisoku_english.pdf)

[http://www.ritsumei.ac.jp/research/member/researcher\\_appointment/ra02/file/yukisyokuin\\_kyuyokitei\\_english.pdf](http://www.ritsumei.ac.jp/research/member/researcher_appointment/ra02/file/yukisyokuin_kyuyokitei_english.pdf)

The employee could be promoted to project assistant professor (400,000 JPY/month) depending on the evaluation of his/her performance etc.

**[Position Period]** To March 31, 2018 (renewable up to four times)

**[Qualification]**

- 1) Possesses Ph.D. degree at the beginning of employment
- 2) Possesses sufficient research experience or educational background in intelligent mechanical systems, system and control theory, robotics, or other related areas.

**[Academic Fields]**

Intelligent mechanical systems, Robotics, System theory, Control theory, Human machine systems, vehicle dynamics and control, human modeling.

**[Application method]**

Please send the following documents via email:

- 1) CV

which includes educational background, work experiences, awards, and contact

information

- 2) Publication list
- 3) Copy of your papers (up to three)
- 4) Description of your research (about two pages)
- 5) Your research plan (about two pages)
- 6) Contact information for three references

**[Application and contact]**

Prof. Takahiro Wada

College of Information Science and Engineering, Ritsumeikan University

Email: adm(at)hr.ci.ritsumeai.ac.jp    Replace (at) with @

Selected our papers related to this project:

- [1] T. Wada, et al., "Authority Transfer Method from Automated to Manual Driving via Haptic Shared Control", IEEE International Conference on Systems, Man, and Cybernetics, pp.2659-2664, 2016
- [2] Nishimura, et al., "Haptic Shared Control in Steering Operation Based on Cooperative Status Between a Driver and a Driver Assistance System", J. of Human-Robot Interaction,4(3),19-37, 2015
- [3] S. Tada, et al., "Simultaneous Achievement of Workload Reduction and Skill Enhancement in Backward Parking by Haptic Guidance", IEEE Transactions on Intelligent Vehicles, 2017 (in press)
- [4] T. Wada, et al., "Analysis of Driver's Head Tilt Using a Mathematical Model of Motion Sickness", International Journal of Industrial Ergonomics, 2016 DOI:10.1016/j.ergon.2016.11.003
- [5] T. Wada, "Motion Sickness in Automated Vehicles", International Symposium on Advanced Vehicle Control (AVEC2016) , 2016

All papers can be downloaded from Prof. Wada's researchgate site:

<https://goo.gl/W2iWXA>