Requests for Collaboration

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Research Interests

- Sleep quality and residential thermal performance
- Window opening behavior during summer-autumn
- Relation between gazing point distribution and illuminance for elderly people when walking

Creative Achievements in The Application of New and Existing Science and Technology

(1) Some items included in the **Maintaining Sleep Score** (F2) were related more strongly to thermal performance for the air-conditioner non-user group (AC-NU) than for the user group (AC-U). For AC-U, F2 was unrelated to solar heat from the windows. The **Fatigue Recovery Score** (F4) was related more strongly to the residential thermal performance for AC-U. F4 was unrelated to solar heat from the windows. **(2)** The **Ratio of air conditioner use** was almost constant, approximately 70%, for outdoor temperatures of 26–33°C. It was regressed as a logit model on indoor temperatures during the cooling season. If seasons are regarded comprehensively, then the ratio began to increase sharply at 22°C outdoor temperature, at which the **ratio of window opening** showed a peak. **(3)** Mean **pupil sizes** when walking differed among participants, but 25–75 percentile values were similar among participants. For some participants, the pupil size changed little with illuminance changes. The gradient of the pupil size regression line by illuminance showed two peaks. **Gazing points** were distributed rather evenly for vertical areas for four participants of steeper gradient, but they were concentrated into specific vertical areas for participants of moderate gradient. Participants with more variable pupil size had a wider vertical view area.

Technology (Product, Process, Device, Service etc.) That I Want to Request for Collaboration

- Eye tracking system
- Thermal environment measuring system (thermometer, hygrometer, anemometer, weather station)

A List of 5 Key Publications

- Noriko Umemiya, Hirona Bessho, Tomohiro Kobayashi, Yoshiki Tachibana and Yusuke Nakayama: Thermal environment ranges providing good sleep quality in bedrooms during summer -Analysis of university students in Osaka, Proceedings of the 10th Windsor Conference, pp.1210-1217, 2018
- Noriko Umemiya, Tetsuro Arai, Tamami Suzuki and Tomohiro Kobayashi: Light environment evaluation under different orders and speeds of illuminance change, Proceedings of the 10th Asia Lighting Conference, Shanghai, pp.72-77, 2017
- Noriko Umemiya, Yoshiki Tachibana, Tomohiro Kobayashi, Yusuke Nakayama and Hirona Bessho: Comparison of thermal environment, thermal sensation and sleep quality among thermal control patterns in summer sleeping rooms, Abstract book of the 17th International Conference on Environmental Engineering, p.131, 2017
- Noriko Umemiya and Tamami Suzuki: Light evaluation in high and low mood states, Proceedings of the Midterm Conference of CIE, pp.687-693, 2017
- Yusuke Nakayama, Noriko Umemiya, Tatsuya Sakane, Jun-ichiro Arai, Tomohiro Kobayashi and Yoshiki Tachibana: Questionnaire survey of air-conditioner effects on sleep quality in summer - Analyses of falling asleep, maintaining sleep factor and fatigue recovery factor, Proceedings of the 6th International Building Physics Conference, International Building Performance Conference, No.862, pp.1-6, 2015