0. SECTIONS

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1. PROJECT

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Title: Building Energy Management and Occupants’ Behaviour - Intelligent Agents, Modelling Methods and Multi-objective Decision Making Algorithms

Dates: 10/2012 to 12/2016

Funding organisation: Engineering and Physical Sciences Research Council

Grant no.: EP/J500501/1; EP/K503125/1

2. DATASET

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Title: Physical Indoor Environment, Occupants' Thermal Sensation and Required Cooling and Heating Load

Description: This research collects indoor physical parameters and occupants’ personal factors including globe temperature, air temperature, relative humidity and air velocity in air-conditioned offices. Occupants’ thermal sensation votes in these environments are also recorded. Based on the collected data, heating and cooling loads needed by the air-conditioning system in single-occupancy offices and open-plan offices are calculated.

Publication Year: 2017

Creator(s): Lai Jiang

Organisation(s): University of Reading

3. TERMS OF USE

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Copyright Lai Jiang 2016. This dataset is licensed under a Creative Commons Attribution 4.0 International Licence: https://creativecommons.org/licenses/by/4.0/.

4. CONTENTS

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File listing

physical\_personal\_parameters\_and\_thermal\_sensation\_vote.xlsx This file contains the data collected in air-conditioned offices. The data include: globe temperature, air temperature, relative humidity, air velocity, occupants' clothing insulation level, occupants' activity level and their thermal sensation vote.

Heating\_and\_cooling\_load\_in\_open\_plan\_office.xlsx This file contains the needed heating or cooling load in open plan offices.

Heating\_and\_cooling\_load\_in\_single\_occupancy\_offices.xlsx This file contains the needed heating or cooling load in single occupancy offices.

Additional information:

Activity Level is the amount of energy used by an animal per unit of time. Its unit is ‘met’. 1 metabolic unit = 1 met = 58,2 W/m2;

Clothing insulation means the thermal insulation provided by clothing. Its unit is ‘clo’. 1 clothing unit = 1 clo = 0,155 m2. °C/W.

Air temperature is a measure of how hot or cold the air is. Its unit is °C.

Relative humidity (RH) is the ratio of the partial pressure of water vapour to the equilibrium vapour pressure of water at a given temperature.

Air velocity is speed of air movement. Its unit is m/s.

Globe temperature or black bulb temperature is a means of assessing the combined effects of [radiation](https://www.designingbuildings.co.uk/wiki/Radiation), [air temperature](https://www.designingbuildings.co.uk/wiki/Air_temperature) and air velocity on human comfort. It is measured by black bulb temperature sensors.

Thermal Sensation Vote is a scale used to measure people’s thermal sensation levels. The relationship between the scale and the sensation is: cold (-3), cool (-2), slightly cool (-1), neutral (0), slightly warm (1), warm (2) and hot (3).

Air temperature, Relative humidity (RH) and the globe temperature are collected by the sensors. Clothing insulation, activity Level and thermal sensation vote values are collected by the questionnaire survey.

File formats and structure: All \*.xlsx.

Please refer to my thesis for all other details, which link is showed below.

5. METHOD and PROCESSING

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For data collection and data processing information, please refer to Lai Jiang (2017), ‘Building Energy Management and Occupants’ Behaviour - Intelligent Agents, Modelling Methods and Multi-objective Decision Making Algorithms' (thesis, to be made available in <http://centaur.reading.ac.uk/>).

Software: Matlab and Excel.