PhD Advert Template

Please complete the following sections:

Project title: Achieving Material Efficiency in Modern Floor Design based on Human Acceptability

Project ID *(optional)*: *Please leave blank*

Accept all year-round applications

Funding information: Self-funded students only

Project description:

**Background**:

The production of construction materials is a significant source of carbon emissions, and the way of achieving low carbon in construction is to enhance material efficiency. In modern buildings, open space is common because of flexibility and agility. However, the long-span floors without internal supports tend to have more vibration. Consequently, it leads to a large material consumption to satisfy the serviceability requirements, and it is against the material efficiency for a lean design. Therefore, there is a huge conflict between the modern open-space building trend and the international low-carbon target.

**Key research gap:**

In terms of floor design, current guidelines have problems: 1) It has been proved that current acceptability is conservative [1]. 2) In current criteria, the existing built environmental categories are not classified specifically, and they could roughly fall into a conservative criterion. Currently, there are no challenge to these two problems in current design guideline, and more investigations into the human acceptability of the floor vibration and the refinement of the criteria should be carried out, thereby achieving the material efficiency and the low-carbon target.

**Experimental works and analysis include**:

Field testing of human perception. Laboratory testing of human acceptability of vibration using simulation. Acceptability criteria refinement based on probability.

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References (optional): [1] Huang, H., Zhang, J., Uttley, J., Chang, W.-S., Wang, B. J., Effect of the environment on the serviceability of cross-laminated timber (CLT) floor - virtual reality as a research tool. Advances in Civil Engineering, 2022.

Application enquires: *Dr Haoyu Huang, haoyu.huang@newcastle.ac.uk,* [*https://www.ncl.ac.uk/engineering/staff/profile/haoyuhuang.html*](https://www.ncl.ac.uk/engineering/staff/profile/haoyuhuang.html)

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Agriculture

[ ]  agricultural sciences

[ ]  agricultural technology

[ ]  arable farming

[ ]  livestock farming

[ ]  forestry & arboriculture

[ ]  other

Anthropology

[ ]  biological anthropology

[ ]  social anthropology

[ ]  other

Architecture, Building & Planning

[x]  architecture

[ ]  built environment

[ ]  construction management

[ ]  landscape architecture

[ ]  rural planning

[ ]  surveying

[ ]  urban planning

[ ]  other

Biological Sciences

[ ]  bacteriology

[ ]  behavioural biology

[ ]  biochemistry

[ ]  biodiversity

[ ]  bioinformatics

[ ]  biophysics

[ ]  biotechnology

[ ]  cancer biology

[ ]  cell biology

[ ]  developmental biology

[ ]  ecology

[ ]  ecotoxicology

[ ]  entomology

[ ]  environmental biology

[ ]  evolution

[ ]  genetic engineering

[ ]  genetics

[ ]  genomics

[ ]  human genetics

[ ]  immunology

[ ]  marine biology

[ ]  microbiology

[ ]  molecular biology

[ ]  molecular genetics

[ ]  neuroscience

[ ]  parasitology

[ ]  plant biology

[ ]  plant cell biology

[ ]  reproductive biology

[ ]  structural biology

[ ]  systematic biology

[ ]  virology

[ ]  zoology

[ ]  other

Business & Management

[ ]  accounting

[ ]  business

[ ]  e business

[ ]  education management

[ ]  event management

[ ]  hospitality

[ ]  human resource management

[ ]  management

[ ]  marketing

[ ]  project management

[ ]  sport management

[ ]  tourism

[ ]  other

Chemistry

[ ]  analytical chemistry

[ ]  applied chemistry

[ ]  computational chemistry

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[ ]  petrochemical chemistry

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Communication & Media Studies

[ ]  broadcast media

[ ]  digital media

[ ]  journalism

[ ]  print media

[ ]  production

[ ]  public relations

[ ]  publishing

[ ]  other

Computer Science

[ ]  artificial intelligence

[ ]  computer architectures

[ ]  computer vision

[ ]  computer graphics

[ ]  cyber security

[ ]  data science

[ ]  human computer interaction

[ ]  internet of things

[ ]  machine learning

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[ ]  quantum computing

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Creative Arts & Design

[ ]  animation

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[ ]  creative writing

[ ]  dance

[ ]  design

[ ]  drama

[ ]  fashion

[ ]  film studies

[ ]  fine art

[ ]  graphic design

[ ]  interior design

[ ]  music

[ ]  music technology

[ ]  photography

[ ]  theatre studies

[ ]  other

Economics

[ ]  econometrics

[ ]  financial economics

[ ]  macroeconomics

[ ]  microeconomics

[ ]  political economics

[ ]  other

Education

[ ]  further education

[ ]  higher education

[ ]  nursery education

[ ]  primary education

[ ]  secondary education

[ ]  special needs education

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Engineering

[ ]  acoustics engineering

[ ]  aerospace engineering

[ ]  atomic engineering

[ ]  automotive engineering

[ ]  bioengineering

[ ]  biomedical engineering

[ ]  chemical engineering

[x]  civil engineering

[ ]  communications engineering

[ ]  control systems

[ ]  cybernetics

[x]  dynamics

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[ ]  electronic engineering

[ ]  energy technologies

[ ]  environmental engineering

[ ]  fluid mechanics

[ ]  gas engineering

[ ]  geotechnical engineering

[ ]  integrated engineering

[ ]  manufacturing engineering

[ ]  marine engineering

[ ]  mechanical engineering

[ ]  mechanics

[ ]  mechatronics

[ ]  nanotechnology

[ ]  offshore engineering

[ ]  petroleum engineering

[ ]  robotics

[ ]  solid mechanics

[ ]  structural engineering

[ ]  structural mechanics

[ ]  systems engineering

[ ]  thermodynamics

[ ]  other

Environmental Sciences

[ ]  climate science

[ ]  hydrology

[ ]  marine sciences

[ ]  meteorology

[ ]  pollution

[ ]  soil science

[ ]  other

Finance

[ ]  actuarial science

[ ]  banking

[ ]  financial management

[ ]  insurance

[ ]  investment

[ ]  taxation

[ ]  other

Food Sciences

[ ]  food hygiene

[ ]  food production

[ ]  other

Forensic and Archaeological Sciences

[ ]  archaeological science

[ ]  forensic science

[ ]  other

Geography

[ ]  agricultural geography

[ ]  cultural geography

[ ]  economic geography

[ ]  environmental geography

[ ]  geographical information systems gis

[ ]  historical geography

[ ]  human geography

[ ]  marine geography

[ ]  physical geography

[ ]  political geography

[ ]  remote sensing

[ ]  social geography

[ ]  transport geography

[ ]  urban geography

[ ]  other

Geology

[ ]  applied geology

[ ]  geochemistry

[ ]  geophysics

[ ]  geoscience

[ ]  geotechnology

[ ]  hydrogeology

[ ]  marine geology

[ ]  palaeontology

[ ]  seismology

[ ]  volcanology

[ ]  other

History & Archaeology

[ ]  african history

[ ]  american history

[ ]  ancient history

[ ]  archaeology

[ ]  asian history

[ ]  australasian history

[ ]  british and irish history

[ ]  economic history

[ ]  european history

[ ]  heritage studies

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[ ]  history of art

[ ]  history of religions

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[ ]  military history

[ ]  modern history

[ ]  russian history

[ ]  social history

[ ]  world history

[ ]  other

Information Services

[ ]  information security

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[ ]  librarianship

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Languages, Literature & Culture

[ ]  african studies

[ ]  american studies

[ ]  asian studies

[ ]  australasian studies

[ ]  chinese

[ ]  danish

[ ]  dutch

[ ]  english language

[ ]  english literature

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Law

[ ]  criminal law

[ ]  commercial law

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[ ]  other

Linguistics & Classics

[ ]  ancient greek

[ ]  celtic studies

[ ]  classics

[ ]  latin

[ ]  linguistics

[ ]  other

Materials Science

[ ]  ceramics

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[ ]  metallurgy

[ ]  polymers

[ ]  textiles

[ ]  other

Mathematics

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[ ]  computational mathematics

[ ]  data analysis

[ ]  engineering mathematics

[ ]  mathematical modelling

[ ]  medical statistics

[ ]  operational research

[ ]  probability

[ ]  pure mathematics

[ ]  statistics

[ ]  stochastic processes

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Medicine

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[ ]  cardiology

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[ ]  neurology

[ ]  nutrition

[ ]  ophthalmology

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[ ]  pathology

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[ ]  pharmacy

[ ]  physiology

[ ]  physiotherapy

[ ]  podiatry

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[ ]  speech science

[ ]  tissue engineering

[ ]  toxicology

[ ]  other

Nursing & Health

[ ]  adult nursing

[ ]  community nursing

[ ]  counselling

[ ]  dental nursing

[ ]  environmental health

[ ]  health informatics

[ ]  medical nursing

[ ]  mental health nursing

[ ]  midwifery

[ ]  occupational health

[ ]  occupational therapy

[ ]  paediatric nursing

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[ ]  surgical nursing

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Philosophy

[ ]  ethics

[ ]  metaphysics

[ ]  philosophy of science

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Physics

[ ]  acoustics

[ ]  astronomy

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[ ]  chemical physics

[ ]  computational physics

[ ]  electromagnetism

[ ]  environmental physics

[ ]  experimental physics

[ ]  medical physics

[ ]  nuclear physics

[ ]  optical physics

[ ]  particle physics

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[ ]  space science

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Politics & Government

[ ]  development studies

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Psychology

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Sociology

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Sport & Exercise Science

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Theology & Religious Studies

[ ]  divinity

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[ ]  theology

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Veterinary Sciences

[ ]  animal welfare

[ ]  veterinary dentistry

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