

CONSTRUCTION TECHNOLOGY OF THE COMMUNITY ENVIRONMENT FOR OLDER ADULTS

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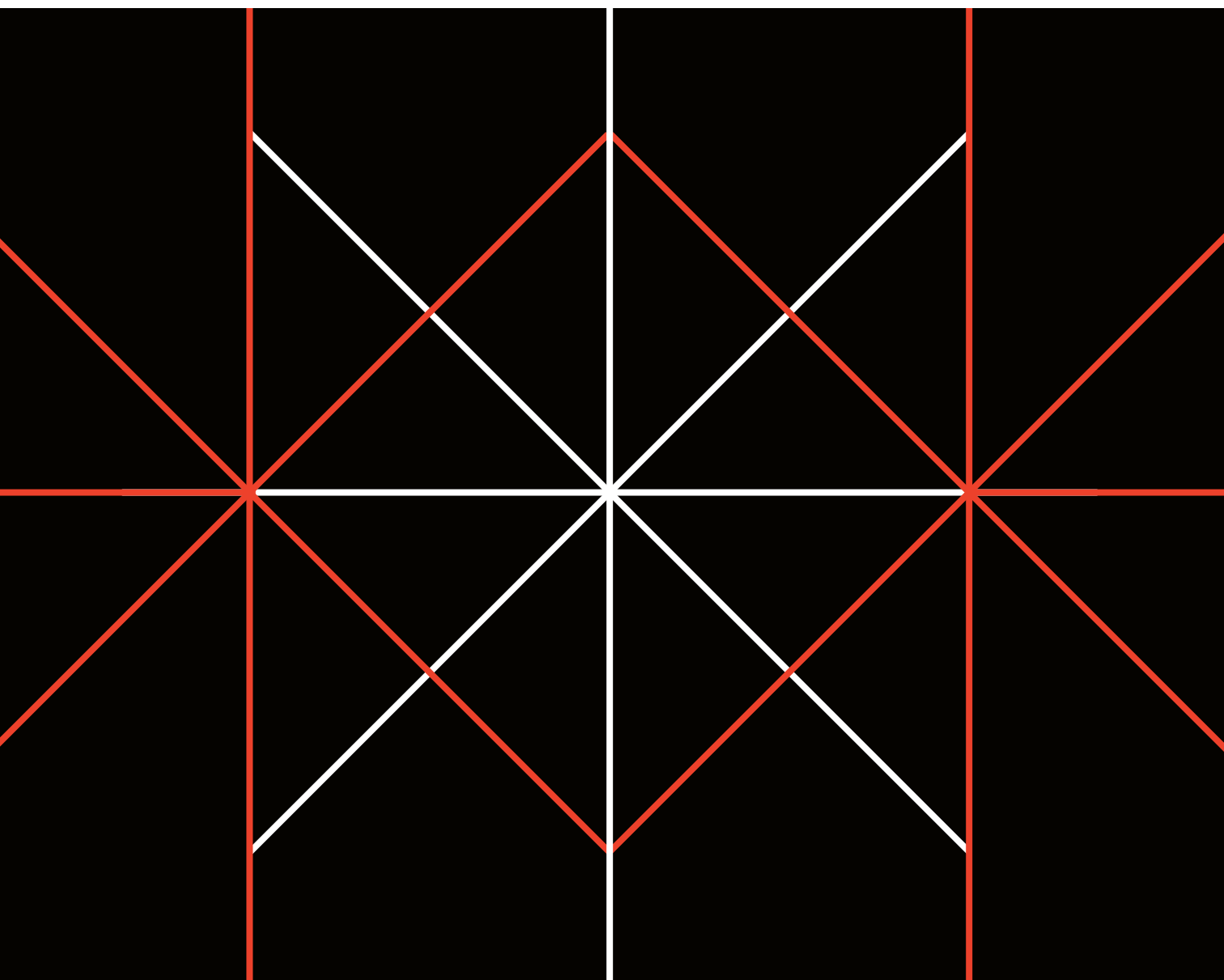
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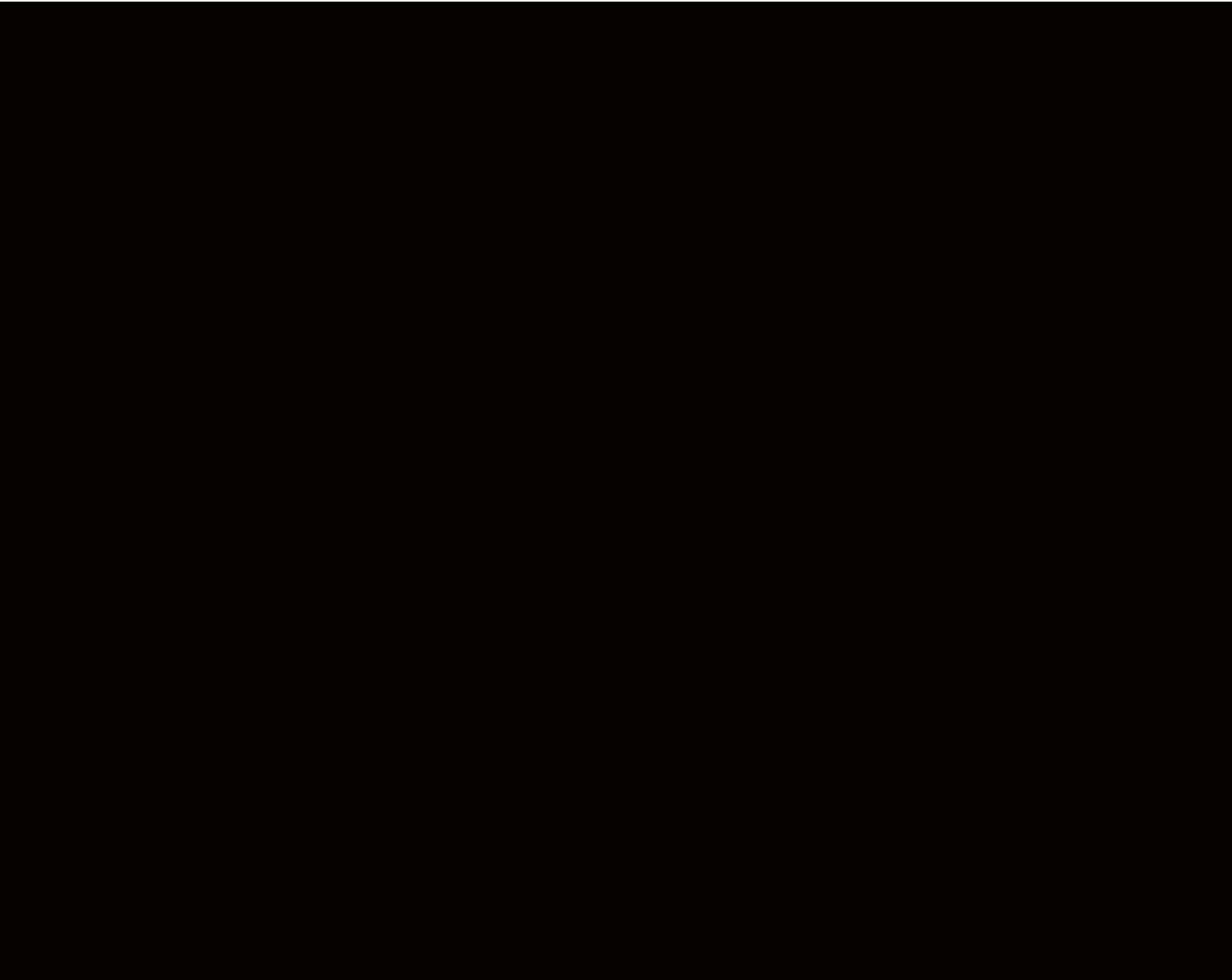
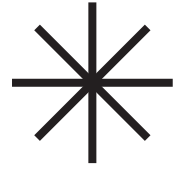
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PhD in Architecture.
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CONSTRUCTION TECHNOLOGY OF THE COMMUNITY ENVIRONMENT FOR OLDER ADULTS



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Cycle

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Year

-

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As we age, levels of physical and sensory abilities gradually decline. Some of the variability in the health of older adults is due to their physical and environment. In addition, different countries' community environment construction techniques need to be more adaptable to the changing needs of the aging population. Thus, there needs to be more research on the relationship between environmental construction technical requirements and the characteristics of the community's age-friendly environment and the potential of environmental construction technical requirements in improving the age-friendly community environment performance and comfort.

Part One: 'Introduction and theoretical background'.

Chapter 1 describes the research problem and research gap addressed in this thesis. It also defines the research aim and objectives, clarifies the research scope and outlines the thesis structure.

Chapter 2 reviews the methods for analysing older adults and environment comfort and discusses the influential factors on older adults and environment comfort. It first discusses the physical function characteristics and environmental needs of older adults, and then the elements and influencing factors of the age-friendly environment. The chapter then introduces the influencing factors of environmental comfort. Experimental methods for measuring environmental comfort are then discussed, and research gaps in environmental comfort for older adults

are summarized.

Chapter 3 first presents the definition and focus of community environment. Techniques for community environment in different functional areas studies are then discussed, including their advantages and constraints. The chapter subsequently summarises the indicators for community environment performance assessment. This chapter further comprehensively discusses the factors affecting the performance of the community environment from the aspects of relevant normative documents, community environment classification schemes for different functional areas, and evaluation tools for the potential of community environment comfort. Finally, the research gaps in community environment studies are summarised.

Part Two: 'Methodologies for Analysing Construction Technology of the Community Environment for Older Adults'.

Chapter 4 proposes a framework for analysing age-friendly community environment performance and its impact on environmental comfort. And develops a age-friendly

Zhang, Y. Q., Liu, X., Meng, Q. L., Li, B., & Caneparo, L. (2022). Physical environment research of the family ward for a healthy residential environment. *Frontiers in Public Health*. <https://doi.org/10.3389/fpubh.2022.1015718>AASHRAE.

Li, B., Zhang, Y., Liu, X., Caneparo, L., Guo, W., & Meng, Q. (2022). Sustainable Renovation on Aosta Residential Building for Carbon Neutrality. *Proceedings of Climate Change and Environmental Sustainability (CCES) 2nd Edition*.



Physical environment measurement in social housing, Aosta, Italy
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community environment classification scheme for facilitating community age-friendly environments analysis. The chapter begins with a statement of the unique contribution offered by the framework, followed by a detailed description of its structure and key components. The chapter then presents the age-friendly community environment classification scheme with a detailed description of its definition, criteria, protocol and implementation.

Chapter 5 details the case studies performed to analysed age-friendly community environment performance and its impact on environmental comfort. The chapter first describes the case study design. It then applies to the Aosta in Italy and the Guangzhou in China. Finally, the chapter presents the Environmental construction technology and Age-friendly Community Environment Characteristics of the two representative age-friendly community environments selected as case study areas for empirical study.

Chapter 6 describes the methods employed for data acquisition and data analysis. It defines the assessment indicators for community age-friendly environment and comfort and their respective data sources. A literature survey and a field campaign were selected as the approach for data acquisition; thus, the chapter details the literature survey protocol including document scope, types, and temporal protocol. And the chapter also details the field campaign protocols including spatial, temporal protocol and sensor requirement. Consistent with the protocols, the weather condition, campaign duration, measurement position and environmental sensor setup were determined.

Part Three: 'Findings on Construction Technology of the Community Environment for Older Adults'.

Chapter 7 presents the literature survey results and the field measurement campaign. The literature survey includes standards, guidelines, atlases, relevant normative documents, policy documents issued by governments and organizations, and related journal papers. Field measurement activities include research on the indoor and outdoor environment of the community.

Chapter 8 comparative analysis of Chinese and Italian communities. Compares the variation in Age-friendly community environment performance and comfort under different combinations of Environmental construction requirements and age-friendly community environment characteristics. Then conducted to estimate the potential of Environmental construction technology to improve community age-friendly environment comfort. The chapter finally presents the implications of the research findings and offers suggestions to improve the comfort of the environment.

Part Four: 'Conclusions and future work'.

Chapter 9 concludes this research and summarises the main research contributions and the significance of this thesis. It also discusses the limitations of this thesis and raises suggestions, improvements, and recommendations for further research.