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Iterative CT reconstruction from few projections for the nondestructive post irradiation examination of nuclear fuel assemblies

[Muhammad Imran Khan Abir](#)

Keywords and Phrases

Compressed sensing; Computed Tomography; Limited angle CT; Post Irradiation Examination; Sparse view CT

Abstract

The core components (e.g. fuel assemblies, spacer grids, control rods) of the nuclear reactors encounter harsh environment due to high temperature, physical stress, and a tremendous level of radiation. The integrity of these elements is crucial for safe operation of the nuclear power plants. The Post Irradiation Examination (PIE) can reveal information about the integrity of the elements during normal operations and off-normal events. Computed tomography (CT) is a tool for evaluating the structural integrity of elements non-destructively. CT requires many projections to be acquired from different view angles after which a mathematical algorithm is adopted for reconstruction. Obtaining many projections is laborious and expensive in nuclear industries. Reconstructions from a small number of projections are explored to achieve faster and cost-efficient PIE. Classical reconstruction algorithms (e.g. filtered

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Keywords and Phrases

The American Dream; Upward Mobility; Social Mobility; Social Immobility; Outcasts United; Jobs; Education; Social; Economy; Social Economic; Sociology

Abstract

This podcast examines the decrease in social and economic mobility in the United States and the effect it has on both the rich and the poor. Mobility has been decreased by a number of factors including funding based on property taxes, a changed interpretation of cultural fit and an overestimation of economic mobility by the general public. This decrease in mobility is apparent in society today but is not being realized by the public. In order to illustrate why this decreasing mobility is such an issue, we are going to analyze the reasons why it is happening and how it effects everyone in their own way.

Jonathan Alex, Missouri University of Science and Technology

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