Inclusive Modeling and Inverse Design of Manufacturable Free-Form Dielectric Metasurfaces

Graduate Student Fellows:
Ibrahim Tanriover
Doksoo Lee

Faculty Advisors:
Wei Chen
Koray Aydin

Academic Disciplines:
Mechanical Engineering
Electrical and Computer Engineering

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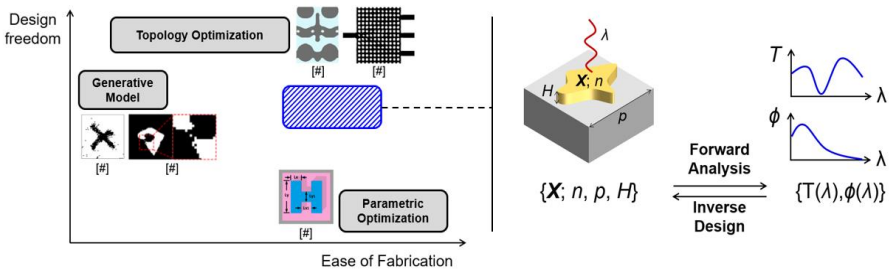
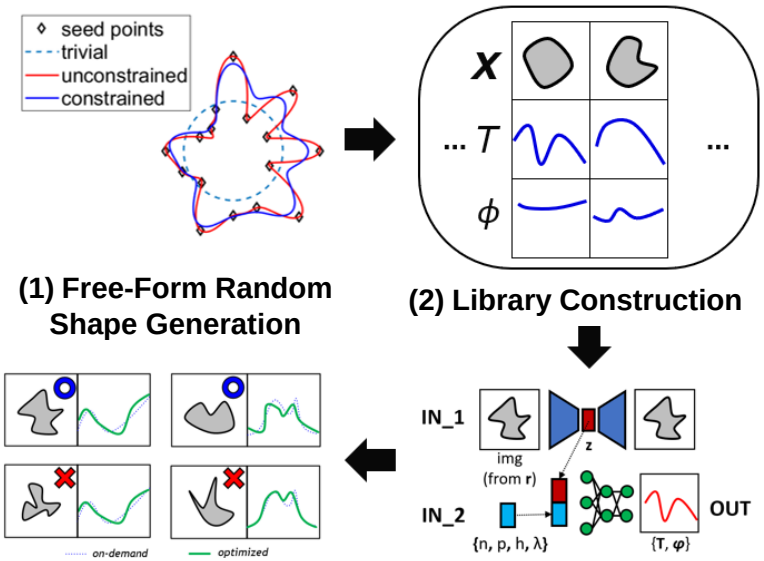
RESEARCH OBJECTIVE

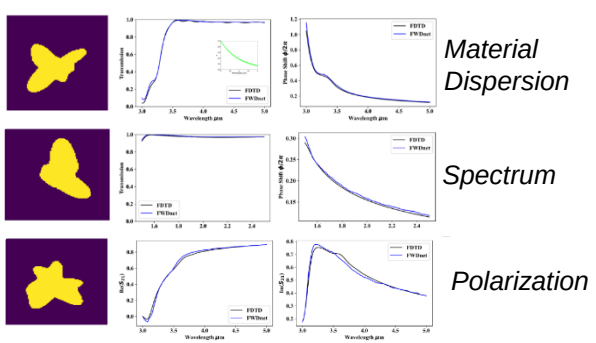


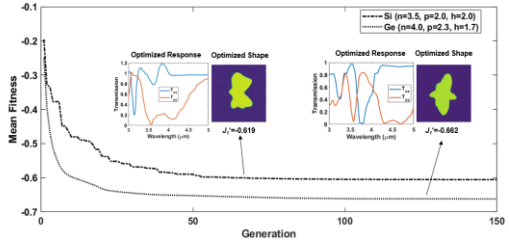
In this work, we propose an inclusive framework for a modeling and inverse design of manufacturable free-form metasurfaces. Advanced metasurface design exploits large design freedom to achieve extreme properties and exotic functionalities. However, existing free-form design approaches suffer from poor fabrication feasibility when prototyping or end-use is of interest. Our framework aims to concurrently combat (*i*) limited design freedom, (*ii*) poor fabrication feasibility, and (*iii*) insufficient model generalizability. The efficacy of our framework is validated by improved model generalizability, full-scale metadevice design, and comparative evaluation of optimization performance using different optimizers.

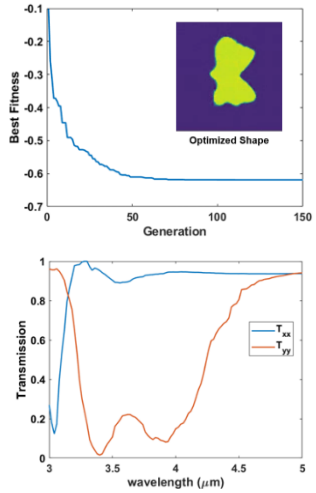
METHODS



RESULTS







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