

# Photonic Inverse Design

using Ansys Lumerical Automation API

Ansys / LUMERICAL

## Features

- Parametric Optimization (PO), also known as shape-based optimization, is driven by an open-source implementation of the high-performance adjoint optimization algorithm
- Built on top of Lumerical's industry-leading FDTD solver using our Automation API
- High-level Python-based interface
- Topology Optimization (TO) advanced method now available

## Adjoint Optimization

- Derivatives are calculated at all points in the parameter space with just two 'forward' simulations
- Enables very large parameter sets
- Driven by an open-source implementation for shape-based design:  
<https://github.com/chriskeraly/lumopt>
- Significant speed-up in convergence:  
C.M. Lalau-Keraly, S. Bhargava, O.D. Miller, E. Yablonovitch. "Adjoint shape optimization applied to electromagnetic design" Optics Express, Vol. 21., Issue 18, pp. 21693-21701.



Dramatically increase productivity through design automation | Automatically discover optimal device geometries for your desired target performance | Optimize against your specified set of manufacturing and operation conditions to identify design with superior performance | Improve the robustness of designs against temperature variations and manufacturing imperfections

