Hyukmo Kang

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EDUCATION

UNIVERSITY OF ARIZONA

Tucson, AZ
Ph.D. in Optical Sciences
Earned May 2022

M.S. in Optical Sciences
Earned Jan 2021

YONSEI UNIVERSITY

Seoul, Republic of Korea
M.S. in Astronomy
Earned Aug 2016

B.S. in Astronomy
Earned Feb 2014

SKILLS

OPTICAL SOFTWARE

Zemax OpticStudio (including ZOS-API) • CodeV • LightTools • VirtualLab Fusion

PROGRAMMING

Matlab • Python • C • FORTRAN

PUBLICATIONS

Plug-in cross-dispersing module for the Large Binocular Telescope's infrared spectrograph LUCI
Journal of Astronomical Telescopes, Instruments, and Systems, 2022, H. Kang et al.

Genetic algorithm-powered non-sequential dwell time optimization for large optics fabrication
Optics Express, 2022, H. Kang et al.

Computational vector fiducial for deflectometry system alignment
Optics Letters, 2021, H. Kang et al.

Computational alignment of on-machine deflectometry
SPIE Optical Manufacturing and Testing, 2020, H. Kang et al.

RESEARCH AND TEACHING EXPERIENCES

LOFT(LARGE OPTICS FABRICATION AND TESTING) GROUP

Postdoctoral researcher | May 2022 – Present | Tucson, AZ

- Developing a testbed to improve phase retrieval algorithm.
- Developing end-to-end simulation tool for a telescope to evaluate integrated performance.
- Developing a metrology system for the heliostat mirror.

Graduate Research Associate | Dec 2016 – May 2022 | Tucson, AZ

- Developed an automated alignment and calibration algorithm of deflectometry system for large aperture freeform measurement.
- Developed the deflectometry simulator using Zemax OpticStudio and ZOS-API programming.
- Performed TVAC test of an 1-m inflatable mirror and measured surface changes using deflectometry.
- Designed, assembled, and tested a cross-disperser module for Large Binocular Telescope (LBT).
- Designed a prototype of freeform AR glasses objective lens using Zemax OpticStudio and CodeV.
- Participated the design of a long-slit spectrograph of a UV space telescope.
- Developed dwell time optimization algorithm for computer-controlled optical surfacing (CCOS) using genetic algorithm with MATLAB simulation.

CENTER FOR SPACE OPTICS, KOREA RESEARCH INSTITUTE OF STANDARDS AND SCIENCE

Graduate Research Assistant | July 2015 – July 2016 | Republic of Korea

- Project for developing a mid-altitude UAV EO camera; performed alignment, assembly, and testing of camera system using interferometer and CMM.
- Developed a probe radius correction algorithm for contact CMM and performed surface error measurement for the grinding stage of an OAP mirror.

KOREA OCEAN SATELLITE CENTER, KOREA INSTITUTE OF OCEAN SCIENCE & TECHNOLOGY

Graduate Research Assistant | Dec 2013 – June 2015 | Republic of Korea

- Project for developing a three-mirror anastigmat (TMA) system for coastal water remote sensing; performed tolerance analysis and alignment.
- Support in radiometric calibration and validation of in-situ spectroradiometers.
- Developed a goniometer to measure spectral BRDF of seawater.

TEACHING EXPERIENCES

- Tutor of Practical Optical System Design workshops (POW) : Lead workshops and provide individual advice with research projects on request as a certified consultant by Zemax. | University of Arizona
- OPTI513R(Optical Testing) | University of Arizona | Spring 2018
- OPTI513R(Optical Testing) | University of Arizona | Spring 2017
- Understanding of Space | Yonsei University | Fall 2015