



OTHER UNITS

Optimization of Density and Surface Finish in Metal Additive Manufacturing

University of Dayton Research Institute: Additive Manufacturing

Poster - Independent Research

PRESENTERS Allyson Meagan Cox

ADVISORS Jared W Speltz

LOCATION, TIME RecPlex Main Gym, 9:00-10:15

Laser Powder Bed Fusion is a type of additive manufacturing of metal parts that uses fine metal powder that is melted together by a high powered laser, layer by layer, based off a CAD model of the desired design. The metal additive field has gained recent and widespread attention for its innovation, customization, and prototyping. However, due to the nature of industries such as aerospace and defense, the demand for quality products is high. Two ways to measure quality of a finished additive part are density and surface roughness. These properties were measured and compared against changing print parameters to determine process settings that yield optimum part quality. Inconel 718 powder was used in the Advances Technology Laser Additive System (ATLAS) to create test pieces with critical geometries in the design. The individual layers of the part were scanned for profilometry data to analyze internal and edge surface roughness. In addition, the final part characteristics were determined using density testing and metallurgy. During the print, volumetric energy density (VED), mark speed, power, hatch design and part design all remained constant. The number of contours around the edge of the design layer and the offset to hatch were altered for each part. These parameters were compared against each other in the results of the experiment to determine the critical settings of an additive manufactured part that would lead to quality finished parts without post processing.

Bargain Brand Justice: Ohio's Indigent Defense Funding Model Makes Justice Inaccessible and Undermines the Sixth Amendment

School of Law: School of Law

Poster - Independent Research

PRESENTERS Ebony D Davenport

ADVISORS John P Feldmeier

LOCATION, TIME RecPlex Main Gym, 9:00-10:15

In 1963, the Supreme Court of the United States ruled that the Sixth Amendment right to counsel shall not be denied to anyone due to their ability to pay in *Gideon v. Wainwright*. The right to adequate legal representation is a noble one that sets this nation apart from other areas of the world. However, without the proper infrastructure, this right becomes less revolutionary and more decorative. When public defender offices are not properly funded, the most vulnerable among us are denied a fundamental right; justice becomes an experience exclusive to the elite; and the adversarial system is won not by the best advocate, but by the depth of her resources. The county-by-county funding model employed by the state of Ohio has the potential for causing disparities among counties because public defender offices are funded based on property tax revenue. This approach to funding creates a piecemeal system in which one's access to justice depends largely on which county he is arrested. When the burden is shifted to the counties, they struggle to provide for public service like waste management, libraries, and schools. This strain on funding creates a Hunger Games-like situation wherein various public services compete for extra crumbs. Because Ohio's current funding model for indigent defense prevents residents from equal access to justice, thus depriving them of a fundamental right to counsel, a new funding source that is independent from the general fund will allow for (1) counties to be fully staffed, (2) proper expert witnesses that can potentially strengthen a client's defense, (3) reduce excessive caseloads which undermine quality representation, and (4) ensure that *Gideon's* promise is upheld.

Business that Changed the World and Media Moguls

Center for International Programs: Intensive English Program

Poster - Course Project, 201816 IEP 033 01

PRESENTERS Maryam Sulaiman Said SULAIMAN Al Ofi, Hassan Ali A Al Zainaddin, Fahad Y F A A Alduaij, Mahdi M E A H Alsaaffar, Muhammad H H H M Alsarraf, Saleh Mohammed

ADVISORS Julie Noelle Gee, Nichole M Lucas

LOCATION, TIME RecPlex Main Gym, 3:00-4:15

The presenters are students from the Intensive English Program. The posters they have created are representative of an end of term project for the level 3 Oral Communication and Listening/Note-taking course; an intermediate class for English language learning students at the intermediate proficiency level. The goal of this assignment is to give students an introduction to research and an opportunity to improve their speaking and presentation skills.