**Undergraduate Research Project**

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| **Project Name:** | Image Compression using Singular Value Decomposition | **Number of Positions:** | 1-2 |
| **Supervisor:** | Mahesh Sunkula |
| **Supervisor e-mail:** | msunkula@purdue.edu |
| **Project Description:** | Image compression is an important area in digital signal processing that deals with reducing the amount of data required to represent an image while minimizing loss of visual quality. One widely used technique is Singular Value Decomposition (SVD), a linear algebraic tool that can be applied to matrices. SVD can be used to compress images by reducing the rank of the image matrix, leading to a more compact representation. The objective of this research project is to study and implement image compression using Singular Value Decomposition and analyze the trade-off between compression ratio and image quality. |
| **Final Deliverables:** |  A poster presentation emphasizing discussing their real-world applications and how these techniques can be extended and adapted for more complex models. |
| **Weekly Working Hours** | 5  |
| **For Credits/Voluntary**  | Either |
| **Desired Qualifications**  | Required: Linear Algebra MA 262/265Preferred: Coding in Python/Matlab |

**If you are interested in participating in this research project, please send an e-mail to the supervisor e-mail listed above together with a resume, a list of what courses you’ve taken or a copy of your transcript, and a personal statement explaining why you are interested in this project.**