

January 26, 2026
2:00pm-3:00pm
KAP 414

Dr. James Enouen
(USC Computer Science)

**Progress in the Duality of Shapley Value Explanations
and Additive Model Interpretations**

Abstract: In recent years, the Shapley value from cooperative game theory has seen a resurgence in machine learning as a tool for explaining blackbox models. Concurrently, the generalized additive model of statistics has been revamped as a tool for interpretable modeling. Several works have pointed to the underlying connections between these two approaches using the tools of functional ANOVA from sensitivity analysis. We develop an extension of this correspondence which handles the challenging case of dependent input variables by leveraging the variational formulation of both SHAP explanations and GAM interpretations. We discuss how this correspondence provides benefits to both sides, developing an algorithm for quicker Shapley explanations and developing a masking technique for automatically purifying GAM shape functions. Finally, we give some comments on the implications this new correlated setting may have for semi-cooperative game theory and some discussion on how this duality is expected to be representative of the larger dualities across the field of interpretability.

Zoom Link: USC Math Finance Colloquium

Join Zoom Meeting

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Meeting ID: 949 7361 9069

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