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Collection of Gas Chromatography (GC) Signals for the Development of a Scent Categorization and Description Algorithm[1] ALEXANDRA DRIEHAUS, VLADIMIR DOBROKHOTOV, IVAN NOVIKOV, MATTHEW PIMIENTA, Western Kentucky University — In this presentation, we discuss the collection of chromatographic data for the development of a scent detection and classification algorithm for chemical scents. Scents are classified into families based on commonalities in verbal descriptions. For example, notes of oak and cedar would correspond to a woody scent, while lilies and rose would be floral. In "The Atlas of Odor Character Profiles" (1985), Andrew Dravnieks rates the applicability of verbal scent descriptors for 160 chemicals. The applicability of these descriptors were used to sort the chemicals into their scent families. Three chemicals were selected from each of three families. Gas Chromatography (GC) is used to generate signals of peaks with retention times characteristic of their corresponding chemicals. The height of the peaks correspond to the concentration of the chemical sample. Using the selected Atlas chemicals, a data bank was created. A machine learning algorithm was created using a simple convolutional neural network (CNN) structure that, when given an input of a GC signal, will output a verbal description of scent. This project is funded by the KY NSF EPSCoR URE program.

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Alexandra Driehaus
Western Kentucky University

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