Representation theory of real algebraic groups on affine G-varieties

We consider a smooth real affine algebraic variety $M$, together with a real linear algebraic group acting regularly on $M$. We then study the regular representation of $G$ on the Banach space of functions on $M$ vanishing at infinity by introducing a certain dense subspace of analytic vectors. If $G$ is reductive, and $K$ a maximal compact subgroup, the considered subspace constitutes a $(g,K)$-module in the sense of Harish-Chandra and Lepowsky, and by taking suitable subquotients, we construct admissible $(g,K)$-modules as well as $K$-finite representations.