Exact determination of Eigenvectors of a square matrix by using simple matrix multiplication of a vector

RAGHURAM PRASAD DASARADHI[{#,*,1}], V V HARAGOPAL[2]
[1] IIT JEE-Mathematics faculty,
Deeksha Jr Colloge, Madhapur, Hyderabad, India.
e-mail: draghuramp@gmail.com
[2] Professor, BITS PILANI, Department of Mathematics,
Hyderabad campus, Shamirpet, Hyderabad, India.
e-mail: haragopalvajjha@gmail.com
[*,#] Corresponding author and Presenting author Dr Raghuram Prasad Dasaradhi

Abstract: In this article, we determine the Eigenvalues and Eigenvectors (Including generalized eigenvectors) of a square matrix by a new approach. This considers, all the roots with their multiplicities are known, using only the simple matrix multiplication of a vector. This process does not even require matrix inversion.

Keywords: *Characteristic equation, Minimal polynomial, Eigenvalues, Eigenvectors, Generalized eigenvectors, Vandermonde matrices, Jordan reduction.*