

# Software for RBF-PUM Interpolation of Scattered Data\*

Roberto Cavoretto<sup>1</sup>, Alessandra De Rossi<sup>1</sup>, Emma Perracchione<sup>2</sup>

`roberto.cavoretto@unito.it`, `alessandra.derossi@unito.it`,  
`emma.perracchione@math.unipd.it`

We deal with the problem of multivariate interpolation through Radial Basis Function Partition of Unity Method (RBF-PUM). In particular, we present some software to improve efficiency, accuracy and stability of the RBF-PUM. The codes – implemented in MATLAB – are free downloadable, and can be used to numerically solve approximation problems which sometimes can also involve real-life applications [1, 2, 3, 4].

## References

- [1] R. Cavoretto, A. De Rossi, E. Perracchione, E. Venturino, Robust approximation algorithms for the detection of attraction basins in dynamical systems, *J. Sci. Comput.* 68 (2016), 395–415.
- [2] R. Cavoretto, A. De Rossi, E. Perracchione, Efficient computation of partition of unity interpolants through a block-based searching technique, *Comput. Math. Appl.* 71 (2016), 2568–2584.
- [3] R. Cavoretto, S. De Marchi, A. De Rossi, E. Perracchione, G. Santin, Partition of unity interpolation using stable kernel-based techniques, *Appl. Numer. Math.* 116 (2017), 95–107.
- [4] R. Cavoretto, A. De Rossi, E. Perracchione, Optimal selection of local approximants in RBF-PU interpolation, *J. Sci. Comput.* (2017), in press.

---

<sup>1</sup>Department of Mathematics “Giuseppe Peano”, University of Torino, Italy.

<sup>2</sup>Department of Mathematics “Tullio Levi-Civita”, University of Padova, Italy.

\*DRWA 2017, Alba di Canazei, Italy, September 4–8, 2017