Motion Learning with Fast Marching
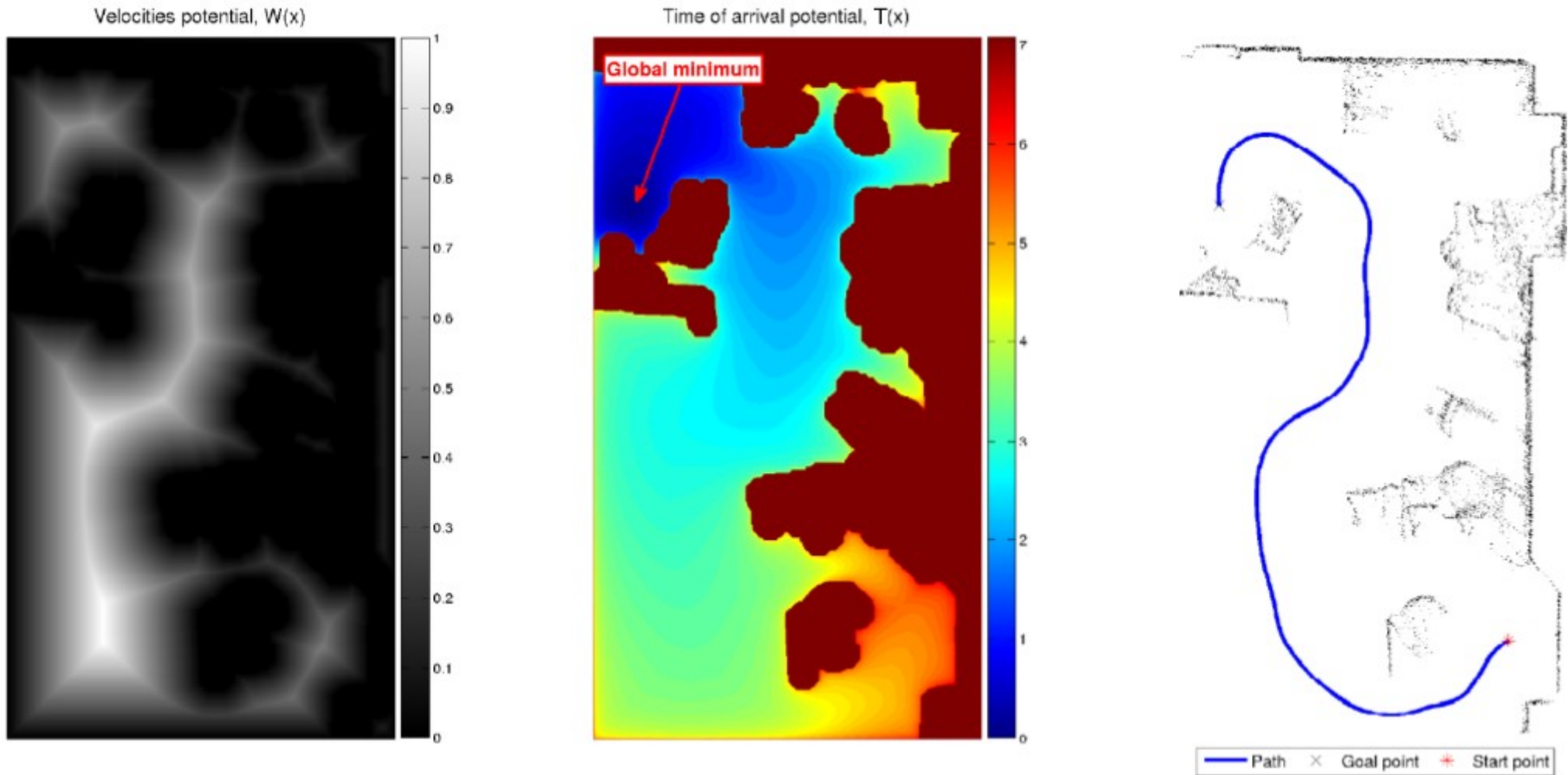
Javier V. Gómez
www.javiervgomez.com
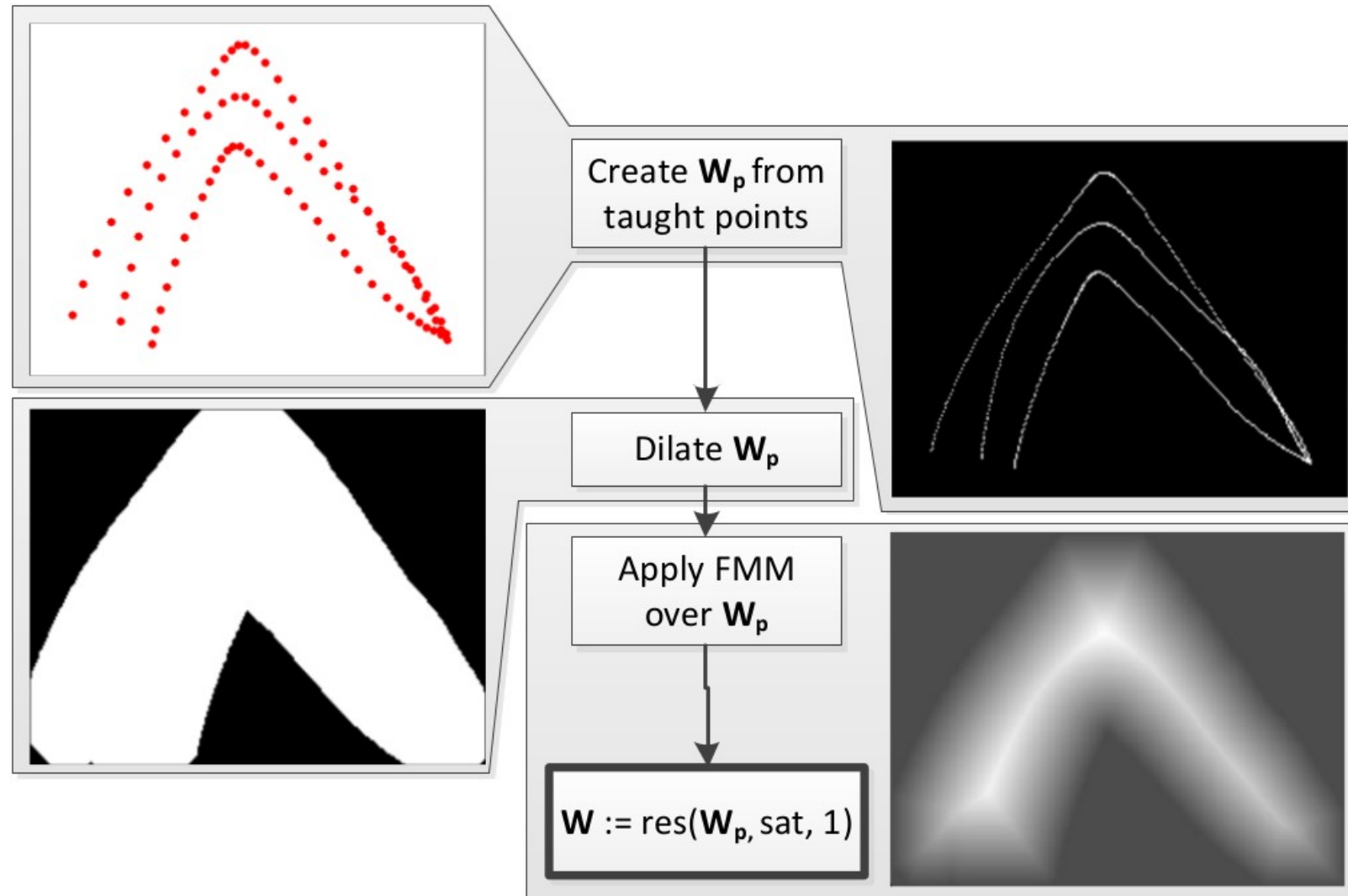
Universidad
Carlos III de Madrid

Fast Marching Square
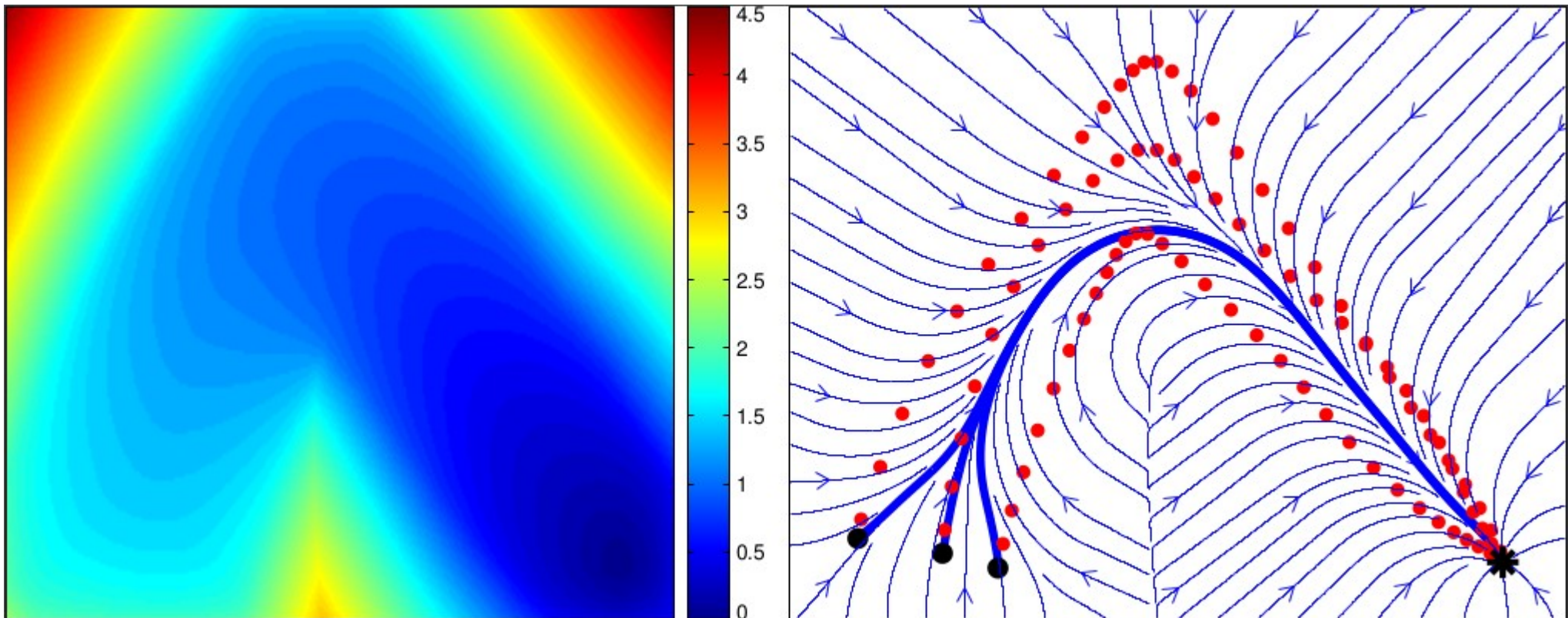

Velocities potential, W(x)

Time of arrival potential, T(x)

Global minimum

Path   ×   Goal point   +   Start point

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Motion Learning with Fast Marching Square
Algorithm

Create **W$_p$** from taught points

Dilate **W$_p$**

Apply FMM over **W$_p$**

W := res(**W$_p$**, sat, 1)

J. V. Gomez, D. Alvarez, S. Garrido and L. Moreno, Kinesthetic Teaching via Fast Marching Square, IROS2012.
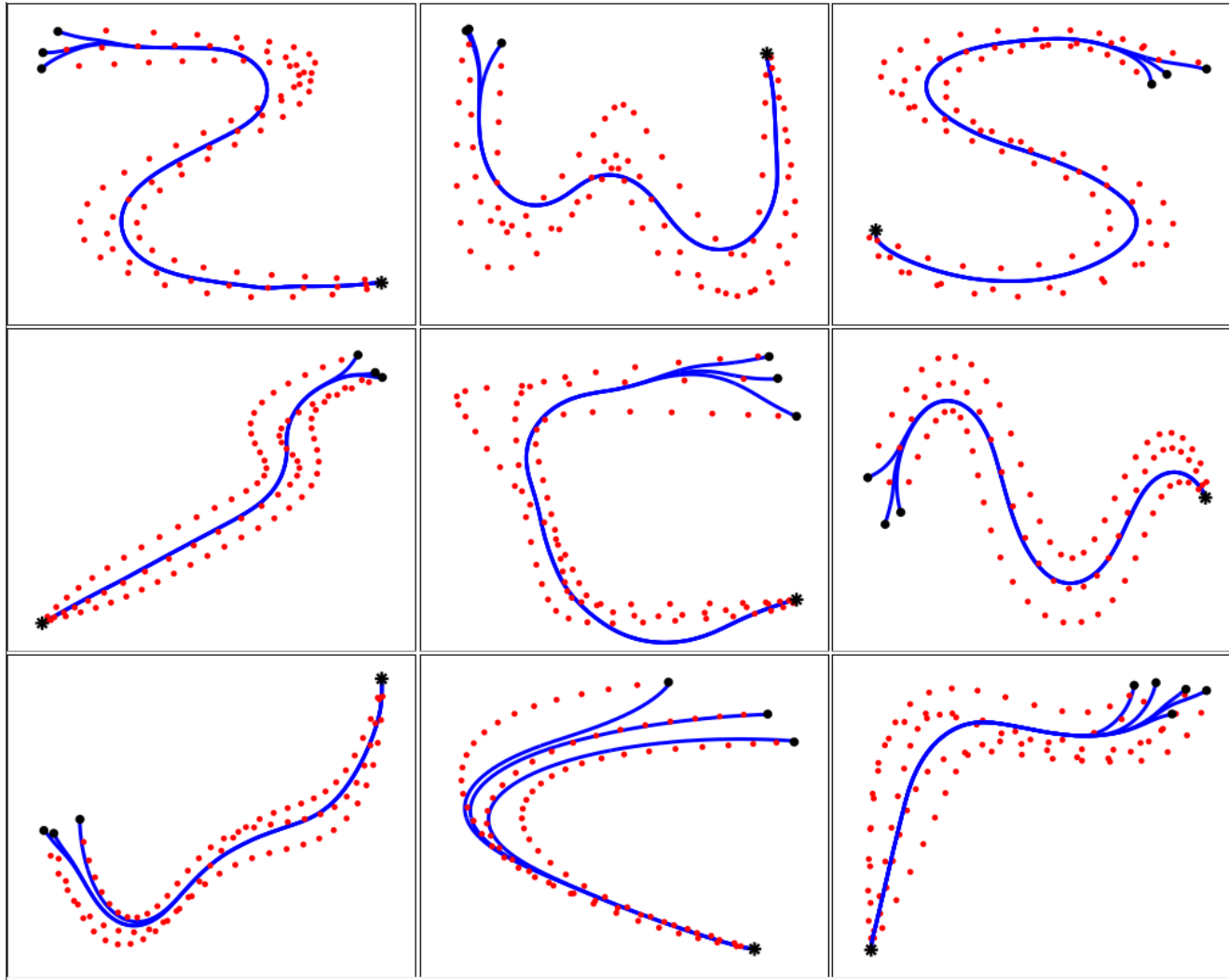
Motion Learning with Fast Marching Square
Simulation

J. V. Gomez, D. Alvarez, S. Garrido and L. Moreno, Kinesthetic Teaching via Fast Marching Square, IROS2012.

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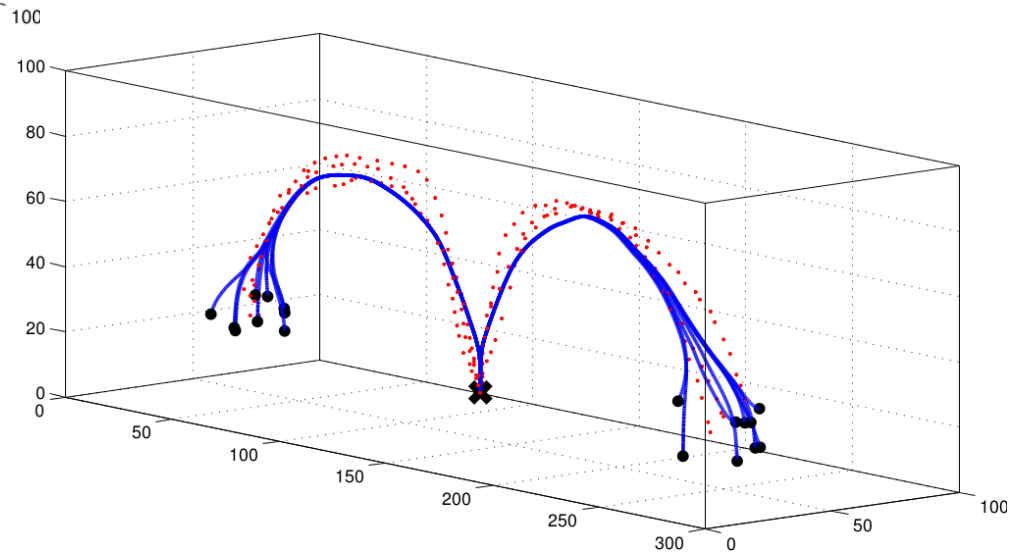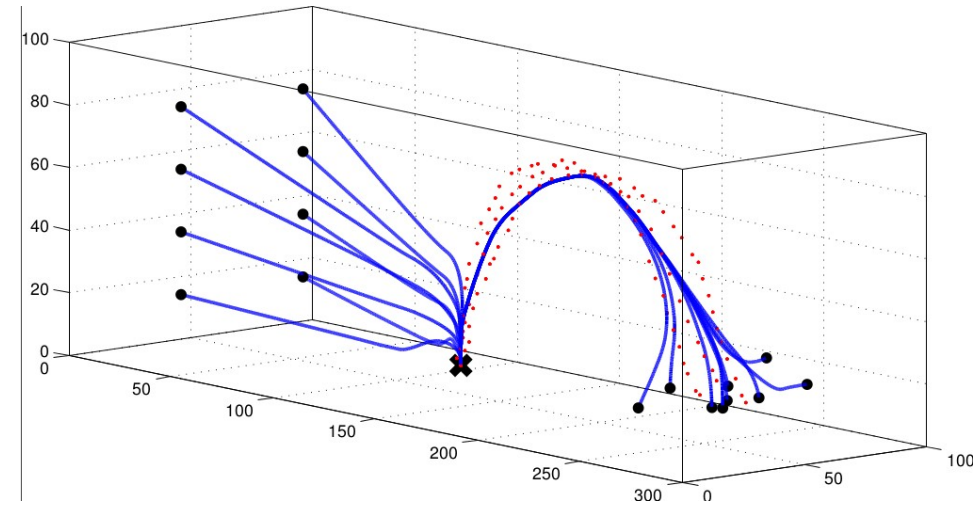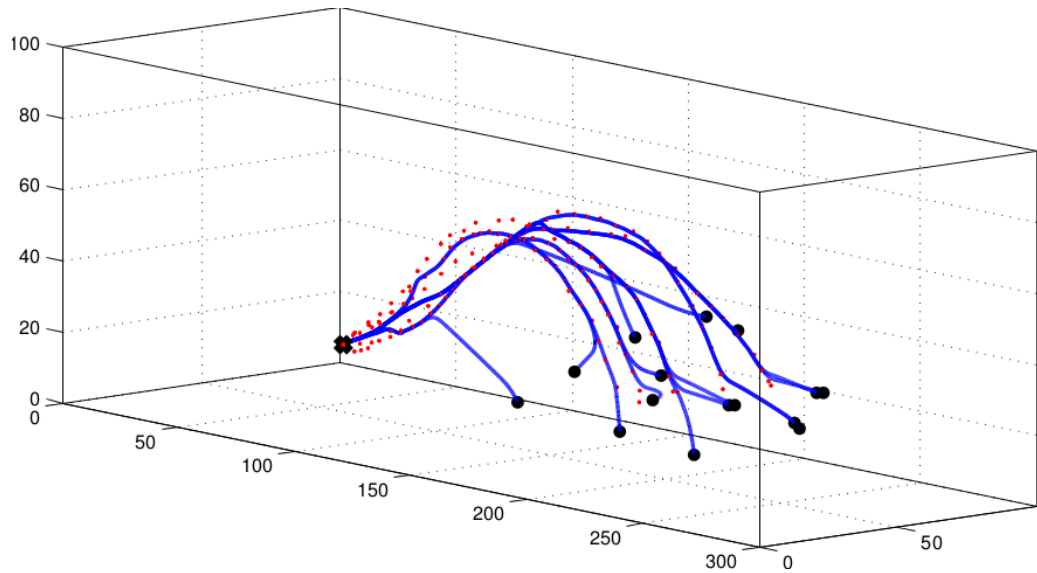# Motion Learning with Fast Marching Square
Results in real dataset

Data from Handwriting Motion Database, S.M. Khansari-Zahed and A.Billard
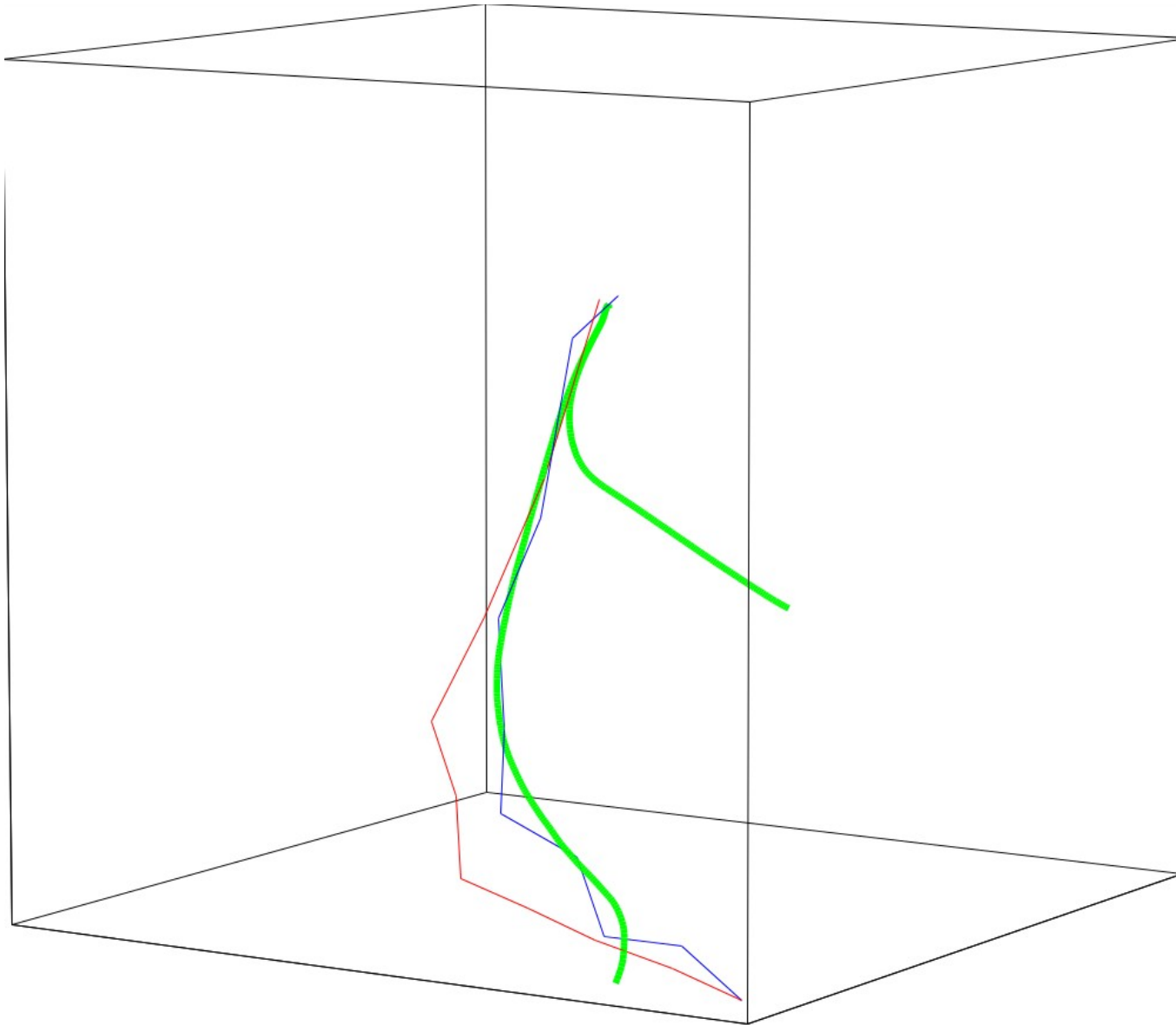http://lasa.epfl.ch/people/member.php?SCIPER=183746/#SEDS_Benchmark_Dataset

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Motion Learning with Fast Marching Square
Result with 3D data

Motion Learning with Fast Marching Square
Implementation on Manfred V2

Red and blue: Given demonstrations,
Green: Reproductions

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Motion Learning with Fast Marching Square
Implementation on Manfred V2 - Demonstrations
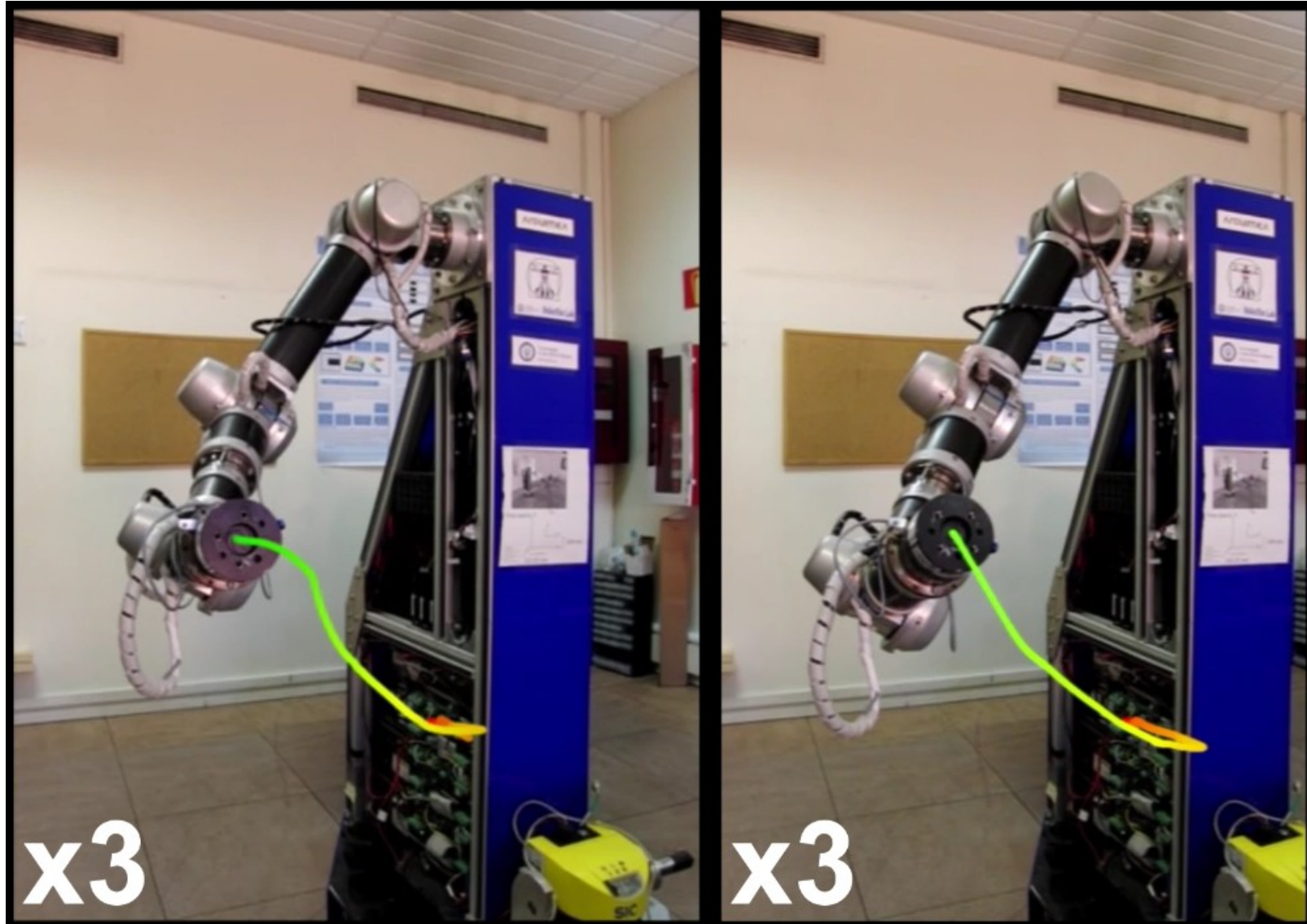
Motion Learning with Fast Marching Square
Implementation on Manfred V2 - Reproductions

Thank you!

More info:

www.javiervgomez.com/index.php/Fast_Marching_Square

jvgomez@ing.uc3m.es

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