

A Tutorial on *IFCPath*

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IFCPath implements the IFC-based path planning for 3D indoor spaces. The algorithm steps are as follows. Firstly, we extract both geometric and semantic information of building components defined within the IFC file. Then, we discretize and map the extracted information into a planar grid. Finally, we find the shortest path based on the mapping for path planning using Fast Marching Method.

Availability

The executable program for Windows platform and tested models are available from <http://cgcad.thss.tsinghua.edu.cn/liuyushen/ifcpath/>

System Requirements

Source code was written to perform fast marching method for path planning between two building elements selected in an input IFC file.

The code was developed and tested using Microsoft Visual C++ 2010 on a Windows 8 system.

REQUIRED INSTALLATIONS:

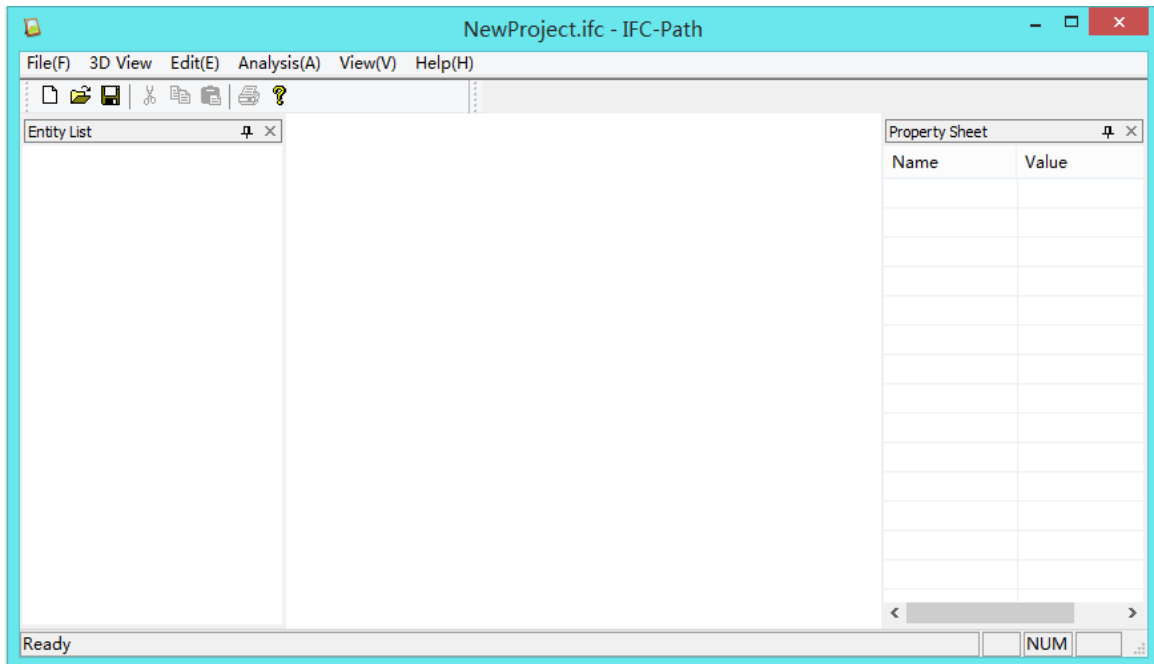
- Microsoft Visual C++ 2010
- MICROSOFT FOUNDATION CLASS (MFC) LIBRARY
- DirectX Software Development Kit

Data set

To show how our algorithm works, we provided some examples. See <http://cgcad.thss.tsinghua.edu.cn/liuyushen/ifcpath/>.

Operation IFCPath

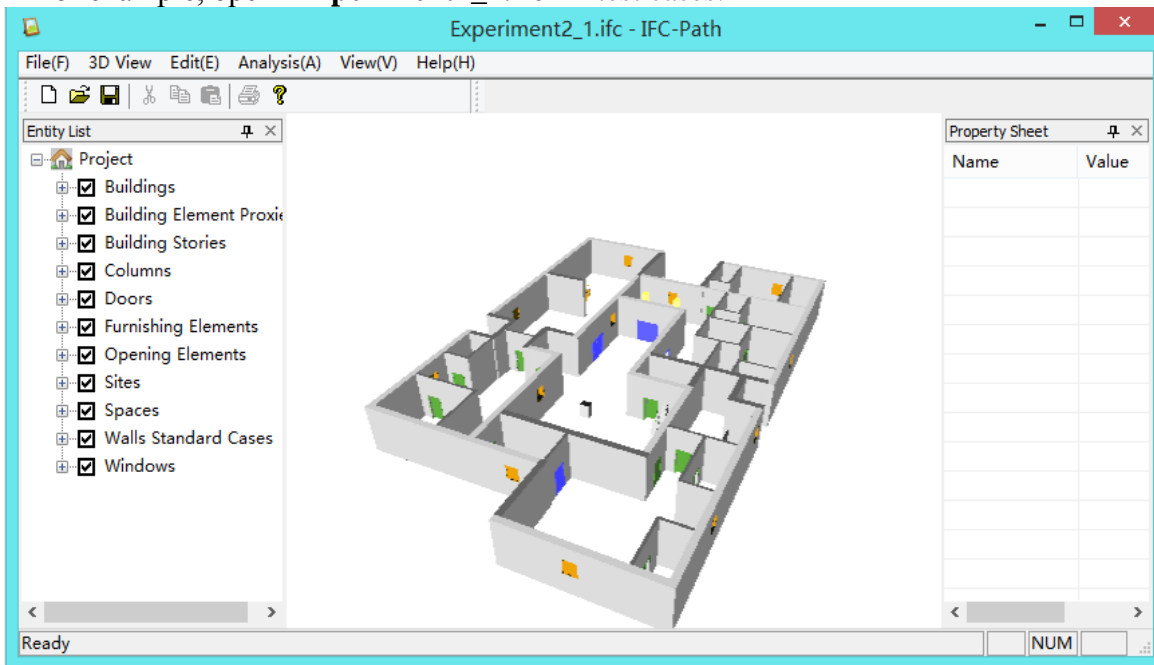
1. Execute IFCPath.exe



2. Open an IFC file to calculate.

File: File → Open.

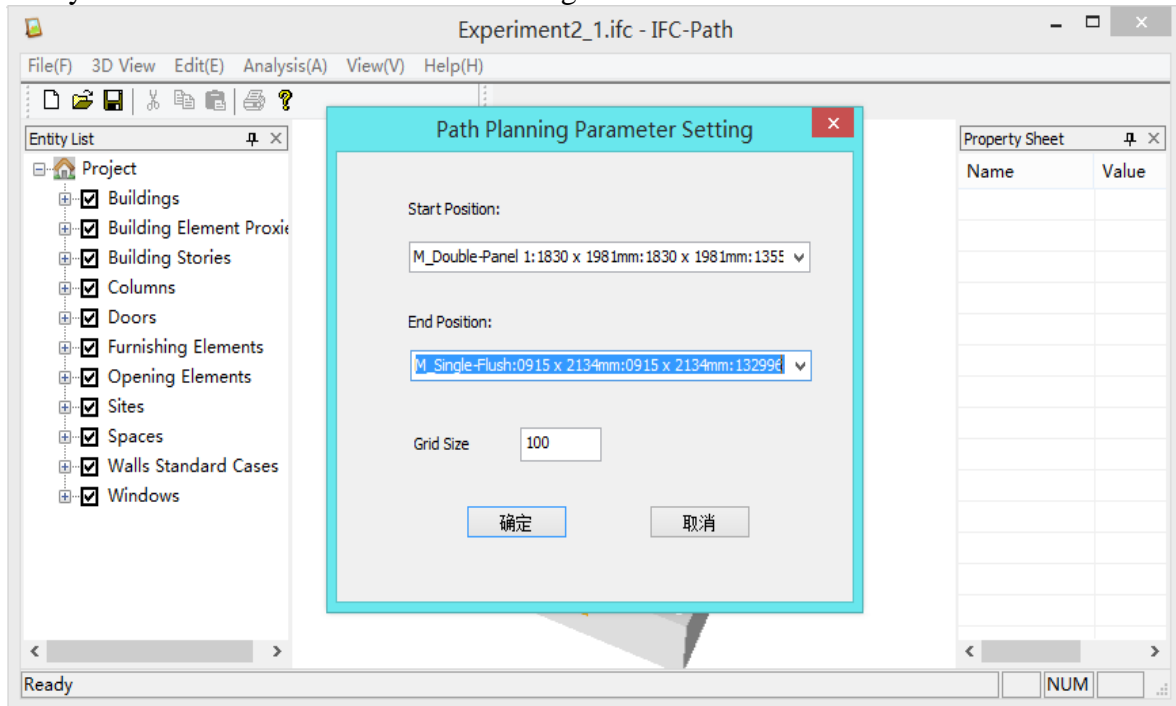
For example, open 'Experiment2_1.ifc' in test cases.



3. Select an algorithm of path planning.

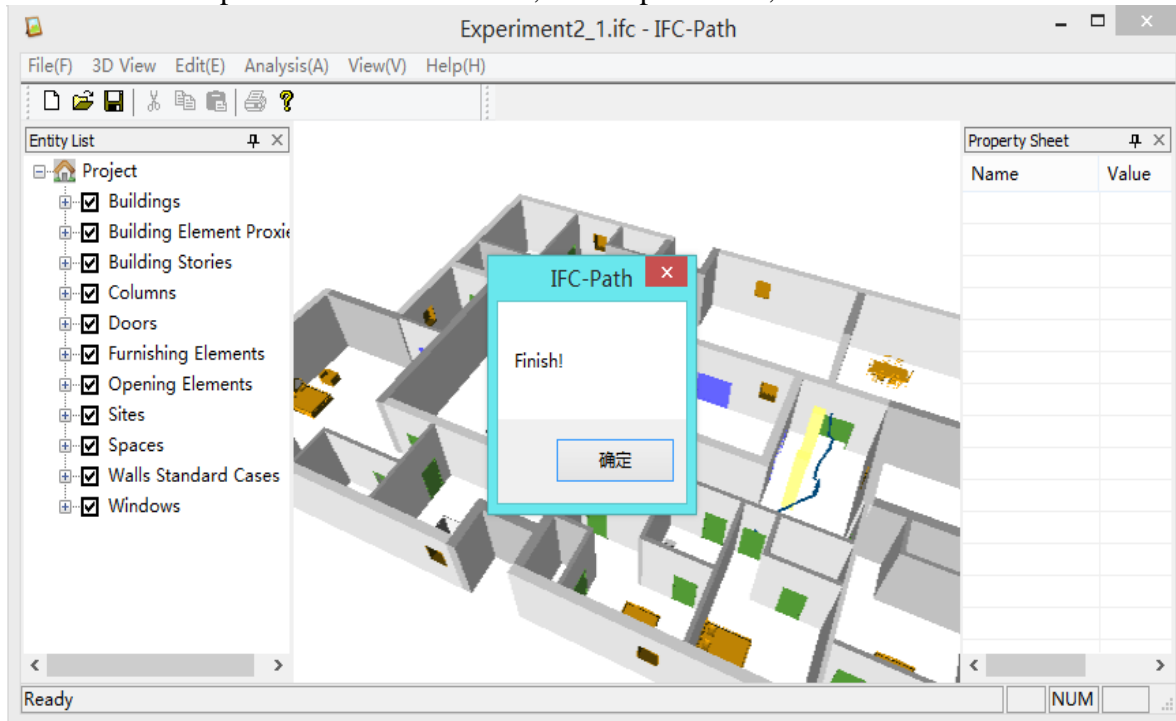
For example, select the fast marching algorithm:

Analysis → Path Simulate → Fast Marching



4. Execute the selected algorithm on the input IFC file

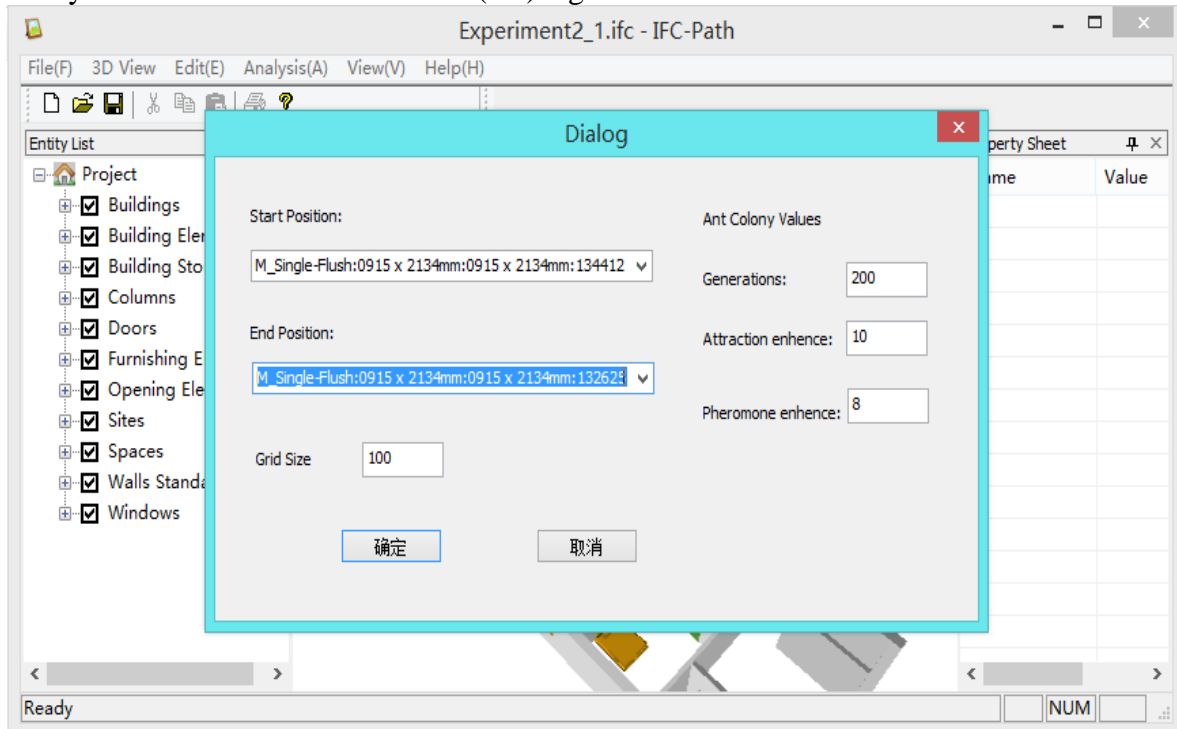
Choose the start position and the end one, set the parameter, and click “OK”.



5. Change another algorithm or IFC file for path planning.

Using an A star (A*) algorithm:

Analysis → Path Simulate → A star (A*) algorithm



6. Execute the selected algorithm on the input IFC file

Choose the start position and the end one, set the parameter, and click “OK”.

