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Generated Raster Zoning in a New Development Area

Case: A New Neighborhood Development

Task: Generate zoning automatically given simple geographical information and a train station location

Purpose: to understand how geographical information can help generate possible future development schemes in a new area
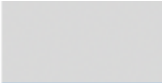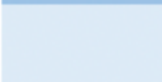
Case: A New Neighborhood Development

	A	B	C	D	E	F	G	H
0	L	L	L	L	L	L	M	M
1	L	L	L	L	L	L	L	M
2	L	L	L	L	L	L	L	L
3	L	T	L	L	L	L	L	L
4	L	L	L	L	L	L	L	W
5	L	L	L	L	L	L	L	W
6	L	L	L	L	L	L	W	W
7	L	L	L	L	L	W	W	W

Key

M Mountain

L Land

T Train station

W Water

$\longrightarrow$?

What will be generated?

Mountain
Water
Water-line w/ residential
Residential
Mixed-use
Commerical
Train station
Park
School

How will it be generated?

- **Python**
- **Simple logics**
- **Distance for residents**
- **Minimum distance for all residents**

Result: A New Neighborhood Development

A B C D E F G H

	A	B	C	D	E	F	G	H
0	L	L	L	L	L	L	M	M
1	L	L	L	L	L	L	L	M
2	L	L	L	L	L	L	L	L
3	L	T	L	L	L	L	L	L
4	L	L	L	L	L	L	L	W
5	L	L	L	L	L	L	L	W
6	L	L	L	L	L	L	W	W
7	L	L	L	L	L	W	W	W

Key
M Mountain
L Land
T Train station
W Water

	A	B	C	D	E	F	G	H
0	F	R	R	X	R	R	M	M
1	R	X	R	F	R	R	R	M
2	X	C	X	R	R	X	R	R
3	C	T	C	X	S	R	R	V
4	X	C	X	R	F	R	X	W
5	R	X	R	R	R	R	V	W
6	R	F	S	R	X	V	W	W
7	R	R	X	R	V	W	W	W

Key
M Mountain
W Water
V Water-line w/ residential
R Residential
X Mixed-use
C Commercial
T Train station
F Park
S School

Result: A New Neighborhood Development

	A	B	C	D	E	F	G	H
0	F	R	R	X	R	R	M	M
1	R	X	R	F	R	R	R	M
2	X	C	X	R	R	X	R	R
3	C	T	C	X	S	R	R	V
4	X	C	X	R	F	R	X	W
5	R	X	R	R	R	R	V	W
6	R	F	S	R	X	V	W	W
7	R	R	X	R	V	W	W	W

Key

M	Mountain
W	Water
V	Water-line w/ residential
R	Residential
X	Mixed-use
C	Commercial
T	Train station
F	Park
S	School

	A	B	C	D	E	F	G	H
0	0	950	950	800	950	1000	0	0
1	902	800	902	0	1000	950	1000	0
2	800	0	800	902	950	800	950	1000
3	0	0	0	800	0	950	950	400
4	800	0	800	902	0	950	320	0
5	902	800	902	1000	950	1000	152	0
6	1000	0	0	950	800	152	0	0
7	1000	950	800	950	380	0	0	0

Key

	Mountain
	Water
	Water-line w/ residential
	Residential
	Mixed-use
	Commercial
	Trainstation
	Park
	School

Result: Water-side public space

	A	B	C	D	E	F	G	H
0	0	950	950	800	950	1000	0	0
1	902	800	902	0	1000	950	1000	0
2	800	0	800	902	950	800	950	1000
3	0	0	0	800	0	950	950	400
4	800	0	800	902	0	950	320	0
5	902	800	902	1000	950	1000	152	0
6	1000	0	0	950	800	152	0	0
7	1000	950	800	950	380	0	0	0

Key

- Mountain
- Water
- Water-line w/ residential
- Residential
- Mixed-use
- Commercial
- Trainstation
- Park
- School

Result: Mixed-use commercial, parks and schools create neighborhood centres

	A	B	C	D	E	F	G	H
0	F	R	R	X	R	R	M	M
1	R	X	R	F	R	R	R	M
2	X	C	X	R	R	X	R	R
3	C	T	C	X	S	R	R	V
4	X	C	X	R	F	R	X	W
5	R	X	R	R	R	R	V	W
6	R	F	S	R	X	V	W	W
7	R	R	X	R	V	W	W	W

Key

M	Mountain
W	Water
V	Water-line w/ residential
R	Residential
X	Mixed-use
C	Commercial
T	Train station
F	Park
S	School

A New Development: Flaws

Raster data not granular enough
Only zoning on a block level
Not adaptive zoning
Linear

A New Development: Uses and Future Development

Brief overview of what zoning can look like
Identifying focal points with high proximity
Alleviates time from planning process
Non-raster approach can increase granularity
Machine-learning improve adaptiveness

Thank you!