# Sprint 7 –hydraulic erosion 22/03/2019 – 05/04/2019

# Research

I am starting to implement the Erosion code, following the journal “Implementation of a method for hydraulic erosion”

Creating a bilinear interpolation from the four gradients from the map [Figure 2].

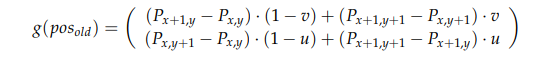


Figure 1 - Bilinear Interpolation for Gradient

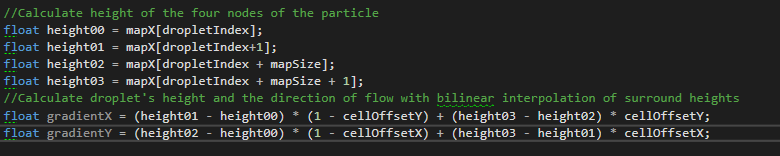


Figure 2 - Implementation in code

# Sprint Review

# WBS

1. Research (60%) (36 hours)
2. Fractal Generation (40%) (24 hours)

# Reading List

Bottom of Form

BEYER, H., 2015. *Implementation of a method for hydraulic  
erosion*, TECHNISCHE UNIVERSITÄT MÜNCHEN

GÉNEVAUX, J.*et al.,* 2013. Terrain generation using procedural models based on hydrology. *ACM Transactions on Graphics (TOG),*32(4), 1-13

GRZEGORZ ROZENBERG and ARTO SALOMAA, 1980. *The Mathematical Theory of L Systems.*US: Academic Press

*Erosion by water,*2012 Directed by Kari KINKEY. Youtube: . 25 Oct,

ROAST, K., 2012. *L-Systems Turtle Graphics Renderer - HTML5 Canvas*[viewed 05/04/ 2019]. Available from: <http://www.kevs3d.co.uk/dev/lsystems/>

ŠT'AVA, O.*et al.,* Jul 7, 2008. Interactive terrain modeling using hydraulic erosion. Eurographics Association, pp.201-210

*8.1: Fractals - The Nature of Code,*2015 Directed by The Coding Train. Youtube: . 11 Aug,

*8.2: Fractal Recursion - The Nature of Code,*2015 Directed by The Coding Train. Youtube: . 11 Aug,

*8.3: Fractal Recursion with ArrayList of Objects (Koch Curve) - The Nature of Code,*2015 Directed by The Coding Train. Youtube: . 11 Aug,

*8.4: Recursion with Transformations - The Nature of Code,*2015 Directed by The Coding Train. Youtube: . 11 Aug,

*8.5: L-Systems - The Nature of Code,*2015 Directed by The Coding Train. Youtube: . 11 Aug,

*Coding Challenge #14: Fractal Trees - Recursive,*2016 Directed by The Coding Train. Youtube: . May 30,

UNITY, 2018. *GameObject.SendMessage*[viewed 05/04/ 2019]. Available from: <https://docs.unity3d.com/ScriptReference/GameObject.SendMessage.html>

UNITY SCHOOL, 2016. *Drawing Lines with LineRenderer*[viewed 01/04/ 2019]. Available from: <https://unity.grogansoft.com/drawing-lines-with-linerenderer/>

*Generating Fractal Trees in Unity  
,*2016 Directed by World of Zero. Youtube: . 26 Sep,

*How to simulate hydraulic erosion in Instant Terra,*2018 Directed by Wysilab. Youtube: . 7 Mar,

# References

GÉNEVAUX, J.*et al.,* 2013. Terrain generation using procedural models based on hydrology. *ACM Transactions on Graphics (TOG),*32(4), 1-13

UNITY, 2018. *GameObject.SendMessage*[viewed 05/04/ 2019]. Available from: <https://docs.unity3d.com/ScriptReference/GameObject.SendMessage.html>

# Bibliography

BEYER, H., 2015. *Implementation of a method for hydraulic  
erosion*, TECHNISCHE UNIVERSITÄT MÜNCHEN

GÉNEVAUX, J.*et al.,* 2013. Terrain generation using procedural models based on hydrology. *ACM Transactions on Graphics (TOG),*32(4), 1-13

GRZEGORZ ROZENBERG and ARTO SALOMAA, 1980. *The Mathematical Theory of L Systems.*US: Academic Press

*Erosion by water,*2012 Directed by Kari KINKEY. Youtube: . 25 Oct,

ROAST, K., 2012. *L-Systems Turtle Graphics Renderer - HTML5 Canvas*[viewed 05/04/ 2019]. Available from: <http://www.kevs3d.co.uk/dev/lsystems/>

ŠT'AVA, O.*et al.,* Jul 7, 2008. Interactive terrain modeling using hydraulic erosion. Eurographics Association, pp.201-210

*8.1: Fractals - The Nature of Code,*2015 Directed by The Coding Train. Youtube: . 11 Aug,

*8.2: Fractal Recursion - The Nature of Code,*2015 Directed by The Coding Train. Youtube: . 11 Aug,

*8.3: Fractal Recursion with ArrayList of Objects (Koch Curve) - The Nature of Code,*2015 Directed by The Coding Train. Youtube: . 11 Aug,

*8.4: Recursion with Transformations - The Nature of Code,*2015 Directed by The Coding Train. Youtube: . 11 Aug,

*8.5: L-Systems - The Nature of Code,*2015 Directed by The Coding Train. Youtube: . 11 Aug,

*Coding Challenge #14: Fractal Trees - Recursive,*2016 Directed by The Coding Train. Youtube: . May 30,

UNITY, 2018. *GameObject.SendMessage*[viewed 05/04/ 2019]. Available from: <https://docs.unity3d.com/ScriptReference/GameObject.SendMessage.html>

UNITY SCHOOL, 2016. *Drawing Lines with LineRenderer*[viewed 01/04/ 2019]. Available from: <https://unity.grogansoft.com/drawing-lines-with-linerenderer/>

*Generating Fractal Trees in Unity  
,*2016 Directed by World of Zero. Youtube: . 26 Sep,

*How to simulate hydraulic erosion in Instant Terra,*2018 Directed by Wysilab. Youtube: . 7 Mar,