1. Meetrapport StepToIntensityImage speed

1.1. Namen en datum

Stefan van der Ham & Bas van Rossem, 6 april 2019.

1.2. Doel

We willen met dit experiment kijken welke van de twee implementaties sneller is. De default implementatie van de setpToIntensityImage tegenover onze implementatie van de setpToIntensityImage.

1.3. Hypothese

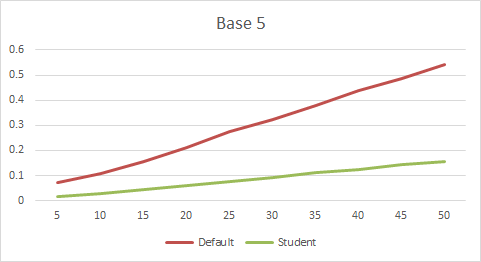
Wij verwachten tot onze implementatie 50% sneller is, omdat het een vrij simpele oplossing is.

1.4. Werkwijze

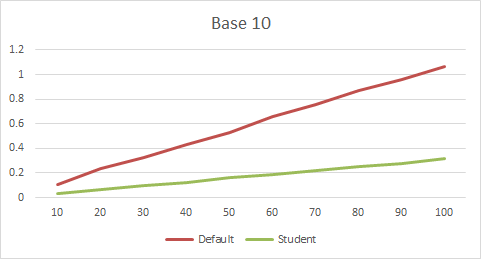
We voeren het programma heel vaak uit met de de vision timer. We kijken van tevoren of onze implementatie werkt met de facial recognition. Wanneer we hebben geconcludeerd dat het werkt, kunnen we de performance gaan meten, door alleen de setpToIntensityImage uit te voeren, hierdoor hebben we ook geen memory leak. Daarna verwerken we alle resultaten in een .csv bestand.

1.5. Resultaten

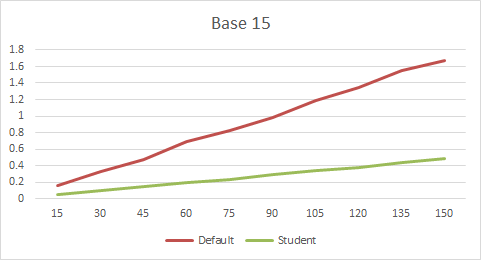
|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Base 5** | **Cycles** | **Default** | **Student** | **Verschil** | **Gewogen verschil** |
|  | 5 | 0.0711942 | 0.0147523 | 0.0564419 | 0.01128838 |
|  | 10 | 0.109603 | 0.0301407 | 0.0794623 | 0.00794623 |
|  | 15 | 0.155237 | 0.0446803 | 0.1105567 | 0.007370447 |
|  | 20 | 0.209851 | 0.0582643 | 0.1515867 | 0.007579335 |
|  | 25 | 0.275406 | 0.0755018 | 0.1999042 | 0.007996168 |
|  | 30 | 0.324032 | 0.093569 | 0.230463 | 0.0076821 |
|  | 35 | 0.380613 | 0.110455 | 0.270158 | 0.0077188 |
|  | 40 | 0.437505 | 0.121914 | 0.315591 | 0.007889775 |
|  | 45 | 0.486853 | 0.142214 | 0.344639 | 0.007658644 |
|  | 50 | 0.542646 | 0.157298 | 0.385348 | 0.00770696 |
| **Total** | **275** | **2.9929402** | **0.8487894** | **2.1441508** | **0.008083684** |
| **Student % sneller** | **71.64028** |  |  |  |  |



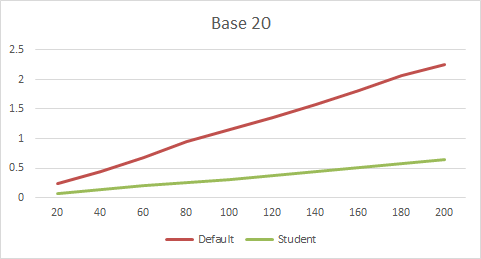
|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Base 10** | **Cycles** | **Default** | **Student** | **Verschil** | **Gewogen verschil** |
|  | 10 | 0.107806 | 0.0311619 | 0.0766441 | 0.00766441 |
|  | 20 | 0.235118 | 0.0659748 | 0.1691432 | 0.00845716 |
|  | 30 | 0.323751 | 0.0986977 | 0.2250533 | 0.007501777 |
|  | 40 | 0.433059 | 0.125047 | 0.308012 | 0.0077003 |
|  | 50 | 0.530945 | 0.16325 | 0.367695 | 0.0073539 |
|  | 60 | 0.655793 | 0.190843 | 0.46495 | 0.007749167 |
|  | 70 | 0.75386 | 0.219424 | 0.534436 | 0.0076348 |
|  | 80 | 0.869954 | 0.248945 | 0.621009 | 0.007762613 |
|  | 90 | 0.960242 | 0.274066 | 0.686176 | 0.007624178 |
|  | 100 | 1.06925 | 0.316958 | 0.752292 | 0.00752292 |
| **Total** | **550** | **5.939778** | **1.7343674** | **4.2054106** | **0.007697122** |
| **Student % sneller** | **70.8008** |  |  |  |  |



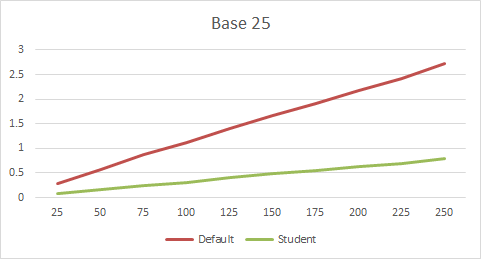
|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Base 15** | **Cycles** | **Default** | **Student** | **Verschil** | **Gewogen verschil** |
|  | 15 | 0.158452 | 0.0466589 | 0.1117931 | 0.007452873 |
|  | 30 | 0.32474 | 0.0924052 | 0.2323348 | 0.007744493 |
|  | 45 | 0.476703 | 0.142003 | 0.3347 | 0.007437778 |
|  | 60 | 0.69115 | 0.193031 | 0.498119 | 0.008301983 |
|  | 75 | 0.822616 | 0.23665 | 0.585966 | 0.00781288 |
|  | 90 | 0.981854 | 0.287708 | 0.694146 | 0.007712733 |
|  | 105 | 1.18309 | 0.334434 | 0.848656 | 0.008082438 |
|  | 120 | 1.3494 | 0.381192 | 0.968208 | 0.0080684 |
|  | 135 | 1.54517 | 0.438379 | 1.106791 | 0.008198452 |
|  | 150 | 1.67576 | 0.487798 | 1.187962 | 0.007919747 |
| **Total** | **825** | **9.208935** | **2.6402591** | **6.5686759** | **0.007873178** |
| **Student % sneller** | **71.32938** |  |  |  |  |



|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Base 20** | **Cycles** | **Default** | **Student** | **Verschil** | **Gewogen verschil** |
|  | 20 | 0.231021 | 0.0627158 | 0.1683052 | 0.00841526 |
|  | 40 | 0.448332 | 0.130501 | 0.317831 | 0.007945775 |
|  | 60 | 0.679356 | 0.205471 | 0.473885 | 0.007898083 |
|  | 80 | 0.94898 | 0.256977 | 0.692003 | 0.008650038 |
|  | 100 | 1.1609 | 0.313274 | 0.847626 | 0.00847626 |
|  | 120 | 1.36133 | 0.378878 | 0.982452 | 0.0081871 |
|  | 140 | 1.57819 | 0.437685 | 1.140505 | 0.008146464 |
|  | 160 | 1.80965 | 0.509288 | 1.300362 | 0.008127263 |
|  | 180 | 2.06759 | 0.58078 | 1.48681 | 0.008260056 |
|  | 200 | 2.25535 | 0.648485 | 1.606865 | 0.008034325 |
| **Total** | **1100** | **12.540699** | **3.5240548** | **9.0166442** | **0.008214062** |
| **Student % sneller** | **71.89906** |  |  |  |  |



|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Base 25** | **Cycles** | **Default** | **Student** | **Verschil** | **Gewogen verschil** |
|  | 25 | 0.285139 | 0.0788945 | 0.2062445 | 0.00824978 |
|  | 50 | 0.570283 | 0.162289 | 0.407994 | 0.00815988 |
|  | 75 | 0.882061 | 0.247844 | 0.634217 | 0.008456227 |
|  | 100 | 1.11328 | 0.314665 | 0.798615 | 0.00798615 |
|  | 125 | 1.41144 | 0.403592 | 1.007848 | 0.008062784 |
|  | 150 | 1.67207 | 0.484527 | 1.187543 | 0.007916953 |
|  | 175 | 1.9068 | 0.541342 | 1.365458 | 0.007802617 |
|  | 200 | 2.1691 | 0.623956 | 1.545144 | 0.00772572 |
|  | 225 | 2.411 | 0.702436 | 1.708564 | 0.007593618 |
|  | 250 | 2.7156 | 0.790469 | 1.925131 | 0.007700524 |
| **Total** | **1375** | **15.136773** | **4.3500145** | **10.786759** | **0.007965425** |
| **Student % sneller** | **71.26194** |  |  |  |  |



1.6. Verwerking

Hier zijn alle totaalresultaten bij elkaar. Het totaal bij gewogen verschil is het gemiddelde van het verschil.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Cycles** | **Default** | **Student** | **Verschil** | **Gewogen verschil** |
| **Base 5** | 275 | 2.9929402 | 0.8487894 | 2.1441508 | 0.008083684 |
| **Base 10** | 550 | 5.939778 | 1.7343674 | 4.2054106 | 0.007697122 |
| **Base 15** | 825 | 9.208935 | 2.6402591 | 6.5686759 | 0.007873178 |
| **Base 20** | 1100 | 12.540699 | 3.5240548 | 9.0166442 | 0.008214062 |
| **Base 25** | 1375 | 15.136773 | 4.3500145 | 10.786759 | 0.007965425 |
| **Total** | **4125** | **45.819125** | **13.0974852** | **32.72164** | **0.007966694** |
| **Student % sneller** | **71.41481** |  |  |  |  |

Student % sneller is berekend door het totale verschil te delen door de totale default tijd.

1.7. Conclusie

De stepToIntensityImage implementatie van de student is 71.41% sneller dan de default implementatie. We kunnen dus concluderen dat de stepToIntensityImage implementatie die wij hebben gemaakt sneller is dan de default implementatie van de stepToIntensityImage.

1.8. Evaluatie

Het doel van dit experiment was om te kijken hoeveel sneller onze implementatie van de image shell was in vergelijking tot de default implementatie. We zaten er met onze hypothese 21 procentpunten naast, dus onze implementatie is best wat sneller dan we hadden verwacht.