Quick Start Imagine++

1. Installing Imagine++ and documentation

Installation: see https://imagine.enpc.fr/~monasse/Imagine++/

2. Quick Introduction to Imagine++

2.1. Headers

```
#include <Imagine/Graphics.h>
#include <Imagine/Images.h>
#include <Imagine/LinAlg.h>
using namespace Imagine;
```

2.2. Build (with Cmake)

```
find_package(Imagine Images LinAlg)
target_link_libraries(prog Imagine::Images Imagine::LinAlg)
```

2.3. Useful types and functions

- small integer (typically for greyscale or color intensity) between 0 and 255: `byte`
- reference to file located in source directory: `srcPath("file_in_src_dir.txt")`
- `Color col(red,green,blue)` predefined: `BLACK, WHITE, BLUE, RED…`
- Channels (byte): `col.r()==col[0], col.g()==col[1], col.b()==col[2]`
- image class: `Image<byte>, Image<float>, Image<Color>`
- image creation: `Image<Color> I(w,h)`
- image loading: `bool ok = load(I, scrPath("image.jpg"))`
- image size: `I.height(), I.width()`
- Pixel access (0<=x<I.width(), 0<=y<I.height()): `I(x,y)=0; return I(x+a,y+b)`
- image enlargement by given factor (with interpolation): `enlarge(I,fact)`
- image blurring with Gaussian: `blur(I,sigma)`
- window opening: `Window W=openWindow(w,h)`
- selecting window for next draw orders: `setActiveWindow(W)`
- image display in open window at given offsets (default: x=y=0): `display(I,x,y)`
- drawing: `drawLine(x1,y1,x2,y2,color)` `drawRect(x,y,w,h,color)` `drawString("hello",x,y,color)`
- wait for mouse click in active window: `click()`, in any window: `anyClick()`
- get mouse position when button clicked: `int button = getMouse(x,y)`, see also `anyGetMouse(x,y,win,subwin)`
- key press: `int c=getKey()`. c='a', '0', '!'. Special: `KEY_UP, KEY_SPACE, KEY_F1…`
- Fixed-size and small vector/matrix: `FVector<float,2>, FMatrix<float,3,4>`
- Variable-size: `Vector<float> V(n); Matrix<float> M(m,n); M.fill(0);`
- Element access (0<=i<M.nrow(), 0<=j<M.ncol()): `M(i,j)=3.14; return M(2,3)`
- Linear system: `Vector<float> x = linSolve(A,b);` (=argmin ||Ax-b||)