Instructions for adding CLR to Caffe.

Modify sgd_solver.cpp:

```
  } else if (lr_policy == "triangular") {
    int itr = this->iter_ - this->param_.start_lr_policy();
    int cycle = 1 +  itr / (2*this->param_.stepsize());
    if(itr > 0) {
      float x = (float) (itr - (2*cycle-1)*this->param_.stepsize());
      x = x / this->param_.stepsize();
      rate = this->param_.base_lr() + (this->param_.max_lr()- this->param_.base_lr()) *
            std::max(double(0),(1.0 - fabs(x))/cycle);
    } else {
      rate = this->param_.base_lr();
    }
  } else if (lr_policy == "triangular2") {
    int itr = this->iter_ - this->param_.start_lr_policy();
    if(itr > 0) {
      int cycle = itr / (2*this->param_.stepsize());
      float x = (float) (itr - (2*cycle+1)*this->param_.stepsize());
      x = x / this->param_.stepsize();
      rate = this->param_.base_lr() + (this->param_.max_lr()- this->param_.base_lr()) *
            std::min(double(1), std::max(double(0), (1.0 - fabs(x))/pow(2.0,double(cycle))));
    } else {
```

```
    rate = this->param_.base_lr();
  }
```

Modify caffe.proto in message SolverParameter:

```
  optional float start_lr_policy = 41;
  optional float max_lr = 42; // The maximum learning rate for CLR policies
```