The original stochastic gradient descent by Bottou is given below:

I. Original SGD algorithm:

```
Initialize random weights
for(k = 0 to n_epochs):
        Shuffle the rows (or row indices)
        for j = 0 to rows:
                Determine gradient using just the jth datapoint
                Update weights with gradient
        Recalculate objective
```

We can modify this into the mini-batch version by selecting random batches in each iteration.

II. Mini-batch SGD algorithm:

```
Initialize random weights
for(k = 0 to n_epochs):
        for j = 0 to rows:
                Shuffle the rows (or row indices)
                Select the first k datapoints where k is the mini-batch size
                Determine gradient using just the selected k datapoints
                Update weights with gradient
        Recalculate objective (optional)
```

A variation of this is to update the gradient with k datapoints such that all are chosen in the inner loop

III. Another mini-batch SGD algorithm:

```
Initialize random weights
for(k = 0 to n_epochs):
        Shuffle the rows (or row indices)
        for j = 0 to rows/k:
                Select datapoints between indices jk and (j+1)k where rows/k is the mini-batch
                size
                Determine gradient using just the selected k datapoints
                Update weights with gradient
        Recalculate objective
```